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Air Pollution*

Engineering Section

SINCE the field that might be considered by this committee is large, it was believed advisable to restrict the scope of this year's report to one phase of the air pollution problem; namely, atmospheric pollution. The report does not include air pollution in enclosed spaces except as they may affect the outside atmosphere. It also seemed advisable in this initial report to limit its scope to certain available information on the source, character, and effect of atmospheric pollution and to some information on the methods of control.

Broadly speaking, atmospheric pollutants include smoke, dust, gases, vapors, fumes, and mists that may be present in the air and that create a nuisance, adversely affect animal or plant life, or cause property loss or damage.

Smoke and dust are no doubt the most widely recognized atmospheric contaminants. Investigation of atmospheric pollution in many cities, including the fourteen large cities in the United States surveyed [1] by the U. S. Public Health Service (1931–1933), have recorded the conditions that exist in some urban communities in the United States and have brought out certain fundamental relations that are of importance in organizing and carrying out smoke and dust abatement programs.

Ely [2] has pointed out that "the so-called smoke abatement problem divides itself into two parts, the smoke problem and the dust problem. The smoke problem, i.e., smoke stacks, is one of combustion and it is always possible with proper equipment and design to stop a smoking stack. The other problem, that of dust and dirt, is a matter of air pollution, and its solution depends on many factors." It should be realized that the smoke stack, even when not smoking, may be the source of fly ash and dust, particularly in the case of pulverized coal furnaces with ineffective fly ash catchers.

In reference to dustfall due to substances other than smoke, the Chicago Association of Commerce in a report on air pollution points out the importance of "refuse in alleys, dust in the streets and vacant lots, dirt on rooftops, and material from tires, clothing, shoes, buildings and all other things that 'wear' as a result of busy city life. At times even soil from farms hundreds of miles away is important." Another form of dust particle that should not be overlooked is the pollen which, in certain concen-

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COMMITTEE ON AIR POLLUTION
Organized 1946.

trations, is responsible for allergic reactions in susceptible individuals.

To these more common forms of smoke and dusts, present to some extent in the air of practically every community, must be added the gases, fumes, vapors, and mists, originating particularly from industrial establishments, that are present in some communities as atmospheric contaminants in sufficient concentration to produce a nuisance, cause property loss, and in some cases affect the public health.

While the presence in the atmosphere of any of the contaminants mentioned may conceivably have health implications, it has always been difficult, and in many instances impossible to demonstrate actual damage to health.

Stead [3] has included in the industrial contaminants that cause nuisances: (a) inert smokes and dusts, (b) mucous membrane irritants, and (c) malodorous substances.

Smokes that result from the combustion of fuel contain soot, fly ash, and unburned or partially burned fuel. Smoke alone, for example, in excessive quantities is disagreeable, discomforting, and of economic significance, but the evidence so far collected has not been able to establish a definite relationship between smoke and health.

The discharge into the atmosphere of dusts from industries such as smelters, cement plants, rock crushers, sand blast plants, and roofing plants, and of some of the organic dusts may, however, have health implications.

Mucous membrane irritants emitted from industrial plants include respiratory irritants such as sulfur dioxide, chlorine, and phosgene, and eye irritants such as acrolein, butadiene, chlorine, and hydrogen sulfide. The discharge of irritating gases into the atmosphere in objectionable quantities will naturally cause serious complaints.

Malodorous substances may originate from a variety of industries and other sources including rendering plants, tanneries, soap factories, glue plants, oil refineries, sewage disposal plants, internal combustion engines, etc. Stern [4] points out that "the chemical groups most frequently responsible for unpleasant odors are the sulfides, disulfides, mercaptans, thiocyanates, isocyanides, compounds analogous to the foregoing of selenium or tellurium, and aldehydes" and that "many of these substances are recognizable as malodorous at less than 0.1 p.p.m., some at as low as 0.0000001 p.p.m."

Various methods and techniques have been devised for locating and studying the source, distribution, and effect of atmospheric pollution. Unless the source and distribution of the contaminant can be determined by direct observation, the discovery of the origin of atmospheric contaminants may be a difficult one requiring the exercise of highly specialized technical skills. The "Report Submitted to the Trail Smelter Arbitral Tribunal," *Bulletin 453*, U. S. Bureau of Mines,[5] is an illustration of the exhaustive technical investigation that may be necessary to determine the damage resulting from the discharge of SO_2 from a smelter under the meteorological conditions that existed in the area surrounding this plant.

A number of devices such as electrostatic and thermal precipitators, impinging apparatus, filters, and atomizers, have been developed for the sampling of dust and bacteria in air. These devices are described in various publications. Probably the most common measure of smoke density is the Ringelmann [6] chart, which is used as a guide in the enforcement of many smoke ordinances.

To establish proof as to the distribution from a given source of such common substances as smoke or fly ash, a number of methods have been used or suggested. One method consists of adding radioactive salts to the smoke

stream in a stack and recovering the radioactive components in the area under observation. Another method described by Sinatt[7] is the identification of cenospheres, which are hollow spheres that are produced when certain solid fuels are burned at temperatures above 600° F. in a limited air supply. If deposits of these cenospheres are recovered from the area of complaint, they constitute evidence of the source of the trouble.

An indirect effect of smoke and dust is the diminution of sunlight and the increase in fogs, clouds, and haze. Fogs accentuated by smoke and dust add to certain hazards associated with motor and airplane transportation. This hazard has been considered in connection with the location of some important airports in this country. Studies have been reported by Drinker[8] on methods for eliminating fogs at airplane landings, but these have apparently not yet reached a practical stage.

The health hazards associated with the release of radioactive substances into the atmosphere have aroused world-wide interest. In times of peace some of the actual and potential sources of these radioactive atmospheric contaminants are plants producing plutonium, uranium, and radioisotopes, and possibly to some extent laboratories conducting experiments with radioactive substances. Studies[9] have been made on the possibilities of the release of radioactive dusts and gases from atomic energy plants, and progress has been made in developing methods for health protection against atmospheric contamination from such plants. Much information on this subject is not yet released for publication.

The control of pollens responsible for allergic reactions in certain individuals has been given more attention in the past few years. Various methods have been tried to control hay fever pollen-producing plants, including cutting the plants before they blossom, and chemical treatment. Among the chemicals recently used for the destruction of these plants, especially ragweed, which is a most important member of the hay fever producing group, is dichlorophenoxyacetic acid commonly known as 2,4-D. This is a synthetic plant hormone which disturbs plant growth and eventually destroys the plant. The chemical is usually applied in the form of a spray but may be dusted. A large number of communities are reported to have used 2,4-D, among them the City of New York.

Sol Pincus has made the following brief statement for this report concerning the use of 2,4-D by the New York City Health Department:

> In 1946, it was estimated that 10,000 acres were infested with ragweed in the five boroughs. It was decided that the use of the new chemical, 2,4-D, dichlorophenoxyacetic acid, would be the most economical method to control ragweed in New York City. Starting very late in the season, we were able to control the growth of 3,000 acres of ragweed, which contributed probably to the unusually low atmospheric pollen concentration during the ragweed season. It was a coöperative program. Equipment and personnel were contributed by the coöperating departments with the Health Department coördinating the work, furnishing the technical direction, chemicals and supplies.
>
> At the close of the 1946 season, a survey was conducted by the Police Department which resulted in 85 Precinct maps showing the locations and areas of ragweed growth in the city. These maps served as guides in the preparation of plans for the 1947 campaign.
>
> It was estimated that 8,000 acres had to be treated in 1947. We obtained six high-pressure power spraying units from the War Assets Administration, two skid-mounted decontaminating units from the U. S. Public Health Service, and various supplementary equipment from the War Assets Administration.
>
> Public and private vacant properties were treated alike without making a charge to the private owners. During the 1947 season, it is estimated that approximately 4,000 or 4,500

acres will be sprayed. It has been adjudged that one application of the chemical is sufficient to kill the ragweed or prevent the pollination and seed production.

A spray solution containing 1,000 p.p.m. of 2,4-D was used. This was applied at the rate of approximately 300 gal. per acre. The sodium and ammonium salts of 2,4-D were used. The cost of the chemical was approximately $1.25 per lb., and the cost for the area sprayed including labor and use of equipment and chemicals, was approximately $11.00 per acre, in 1946. Figures for 1947 are not yet available.

It was noted that the area sprayed during July and August of 1946 showed very little or no growth of ragweed during the 1947 season.

Many neighboring communities have instituted similar programs in reduction of ragweed pollen. This department coöperated in making available our experiences and also in giving a training course under New York University direction to health officers and other officials of these communities.

While encouraging results have been obtained in the elimination of hay fever pollen-producing plants in certain areas where regulatory measures are in effect, the control of pollens from outside areas still remains a problem. Investigations have shown the long distance that pollens may travel under meteorological conditions favorable to their migration. The question, however, of the kind and the concentration of hay fever-producing pollens, regardless of their source, becomes an important factor in dealing with any situation.

Various methods have been developed for sampling and counting air-borne pollen and for computing the results of such examinations in terms of pollen concentrations in the atmosphere. Dahl and Ellis,[10] after a study of the methods for computing pollen concentrations state that "those which utilize volumetric factors derived from Stokes' law are less accurate than those methods which employ a unit area basis," and that "it is to be desired that reports should include a record of the amount of pollen per unit of area of the exposed slide, whether volumetric data are computed or not."

The measurement of gases and vapors emitted from various sources presents serious difficulty when low concentrations are encountered, because the lower limit of most chemical methods is around 1 p.p.m. by volume. Some instruments, however, have been developed that are helpful in this connection. The Thomas Autometer[11] is one apparatus which will collect its own samples and measure and record concentrations of sulfur dioxide and sulfur trioxide as low as 2 parts per billion. This machine has also been developed to measure separately the concentration of other gases, including hydrogen sulfide, carbon disulfide, ethyl mercaptan, and thiophene. The method, at a higher operating temperature, is also applicable to chloroform, carbon tetrachloride, ethylene chloride and chlorobenzene.

Whipple[12] in 1921 pointed out many of the fundamentals in regard to odors and their relationship to odor nuisances in a discussion on odors and their travel habits.

The measurement of odors from various sources is attended by many difficulties. Various methods[4, 13-15] that employ the sense of smell of the observer have been devised for evaluating the intensity of odors. Odor scales[4, 16] indicating threshold odor concentrations and tables showing the concentrations and characteristics of various readily perceptible substances in air have been prepared.

Hemeon and Hatch[17] point out that "osmometry is in need of research cultivation; we know little about it. Moreover, the subject of odors is inextricably entangled with psychological factors which although usually foreign to chemist and engineer cannot be ignored. The facts of olfactory fatigue and revivification by periodic variation in concentration are relevant, as is the

law expressing the logarithmic relation between sensory response and the magnitude of stimulus—i.e., concentration of the vapor or gas."

The instrumental measurement of odors presents a difficult problem, however, because odors are due to the perception of molecules rather than a response to conditions. Some attempts have been made to develop physical methods of measurement, such as the work of Dyson,[18] who used the Raman shift for this purpose. Apparently, however, no practical method has so far been devised, and there is need for research in this field.

A large amount of technical work has been undertaken on methods to prevent atmospheric pollution from smoke, dust, gases, vapors, and fumes.

Probably the greatest amount of attention has been focused on smoke control, since this kind of air pollution is obvious and attracts public attention. Fuels and combustion equipment and methods have been studied. As a result detailed information is available on the construction and operation of nearly all types of fuel burners to improve or correct combustion difficulties.

Extensive studies have been made on the polluting substances released from stacks and the dilution that may be anticipated under varying meteorological and other environmental conditions. Investigations of the U. S. Bureau of Mines [19] indicate that factors of dilution of the polluting material at given points of travel can be computed with rough accuracy for a given horizontal distance if the stack velocity and wind velocity are known.

The importance of meteorological and other environmental studies should not be overlooked in selecting new plant sites, especially where gaseous waste disposal problems are anticipated.

Meteorological factors are involved both in the creation and in the solution of atmospheric pollution problems. For example, there are the disturbing effects of temperature inversion, which cause a natural rise of atmosphere containing contaminants when the earth's surface is warmer than the air, but produce the formation of a so-called "lid," holding pollution down near the earth's surface, when the earth is colder than the air.

The control of industrial dusts, gases, vapors, and fumes at the source also presents difficult technical problems. However, considerable progress has been made in their solution. Hemeon and Hatch [17] mention among the available control methods the following: "scrubbing and absorption towers for vapors and gases, especially acid gases, various types of dust and fume collectors, and miscellaneous chemical processes such as combustion of organic contaminants or neutralization in conjunction with scrubbing." In some cases the use of raw materials free from objectionable impurities may eliminate the difficulties, while in others the utilization of the contaminant in the manufacture of a useful by-product may provide a solution. These authors mention the substantial body of experience in gas cleaning in industry, much of which has not been applied to atmospheric pollution control. They emphasize the need for "further research and field study, particularly with respect to the collection of dust and fumes, to provide basic information on stack gas cleaning equipment and other control measures especially for small plants."

Many large and small cities in the United States have recognized the problem of atmospheric pollution and have passed ordinances regulating smoke or smoke and dust, while some of the large cities have a relatively complete coverage of the important atmospheric contaminants. No attempt has been made in this report to make a nation-wide survey of the administrative control of atmospheric pollution. However, for illustrative purposes, information was obtained

on control practices in three large cities; namely, New York, St. Louis, and Los Angeles, which have organized control programs.

Control of atmospheric pollution in New York City * is an activity of the Bureau of Sanitary Engineering of the Department of Health under the general supervision of the Sanitary Engineer Director of the Bureau.

A special force of smoke inspectors has been organized consisting of one supervising inspector and six field inspectors. The regular district inspectors (approximately 70) take care of the routine complaints of smoke, odors, fumes, etc. The special smoke inspectors make investigations involving larger plants, utilities, harbor craft, etc. They also make surveys of air pollution in areas of greatest intensity of smoke discharge. The supervising smoke inspector checks over the work of the regular district inspectors in air pollution.

The district inspectors, in groups of five are given an intensive course by the supervising smoke inspector in methods of investigating and controlling air pollution. The course takes about six weeks.

Eleven committees have been organized to coöperate with the Health Department. These committees represent: (1) real estate and industry, (2) railroads, (3) utilities, (4) harbor craft, (5) solid fuels, (6) fuel oils, (7) public health aspects, (8) laws and legislation, (9) plant operation, (10) city departments, (11) public coöperation. The committees have met in most instances monthly with the Commissioner of Health and the Director of the Bureau of Sanitary Engineering.

Monthly sootfall collections have been made for the past five years from 13 locations, mostly in areas of high smoke discharge. These monthly samples have been analyzed for solids and ash in both the water-soluble and water-insoluble components of the sample. The results obtained, when compared with those of previous periods, give a rough estimate of the increase or decrease in smoke discharge over wide areas of the city.

In comparison with the sootfall records obtained during a WPA air pollution survey in 1936, recent results show that there was a large increase in sootfall during 1943 and 1944, which has subsequently lessened considerably. The increase during the war period was concurrent with a tremendous overloading of coal-burning power plants.

A great amount of rehabilitation of fuel-burning plants and installation of soot collectors has been accomplished during the past two years. The large electric companies have made significant improvements at their generating plants at a cost of millions of dollars. A number of the industrial plants, hospitals, and mercantile establishments also have improved their fuel-burning equipment and put in soot collectors.

A detailed program for the extensive training of janitors and superintendents has been prepared and will start in the fall of 1947 in some of the Board of Education high school buildings.

At the same time that the janitors and superintendents are acquainted with methods of firing furnaces and preventing smoke and odor complaints, they will be given instruction in rodent and vermin control and in the sanitary maintenance of buildings.

A program for future extension of this work has been drawn up and will include the addition to the department of a mechanical engineer—an expert in smoke control work, two assistant engineers, and a number of field inspectors. This expansion is now awaiting the allotment of funds by the city authorities.

* Information concerning New York City was furnished by Sol Pincus, Senior Sanitary Engineer, New York City Health Department.

St. Louis * has attracted considerable national attention because of the extent of its air pollution problem and the efforts made to control it. These efforts, principally due to the anti-smoke ordinance and its enforcement, appear to have produced a definite and permanent improvement. This is particularly true of sootfall, visible smoke, and volatile sulfur compounds in the air caused by combustion of solid fuels.

The city, being located close to the Southern Illinois high-volatile bituminous coal fields, uses such fuel in great quantity. The anti-smoke ordinance secures the control of the pollution of air from such fuel use by a multiple approach:

1. It prohibits the use of high-volatile bituminous fuel except in mechanically-fired furnaces and power plants.
2. It requires the air- or water-washing of all high-volatile bituminous fuels to reduce sulfur compounds.
3. It sets certain limits for fly ash emission which invariably require collector installations on powdered-fuel power plants.
4. It has the usual and necessary measures of promoting proper firing, registration of new heating installations, maximum density and duration limitations for smoke emission and a qualified inspection force.

Enforcement of the anti-smoke ordinance is the responsibility of the Commissioner of Smoke Regulation who directs a division which is a part of a Department of Public Safety. The Health Division, a part of the Department of Public Welfare, works closely with the smoke control office and has assisted in providing some technical assistance, particularly along the lines of laboratory and air analysis techniques.

Most of the present air pollution problems center in fly ash emission from plants permitted to postpone collector installations due to wartime equipment shortages and such emission from large plants near to but outside the city limits and, therefore, beyond the city's legal jurisdiction. Some smoke and chemical odor problems occur at times due to such materials being carried over the city from the highly industrial area just to the east of the city, in Illinois.

The remaining air pollution problems are, in general, not city-wide but rather limited to local neighborhoods, and are due to isolated industries producing objectionable dusts, fumes, or gases. Almost invariably, these cannot be demonstrated to be either a health hazard or a public nuisance (involving property damage over a considerable area). At present, the city charter and ordinances give power to the Health Commissioner to declare and abate public nuisances (after hearings). Those air pollution situations which come within this category can be and have been controlled by this legal means. The Health Division has extensive air sampling equipment and experienced personnel in its Industrial Hygiene Section. Through these means, it is able to locate responsibility and recommend and enforce corrective action.

The inadequacy of present laws for air pollution problems not of public nuisance proportions is recognized. Plans are now being made for the formulation of an overall air pollution control ordinance. Provision for an adequate and qualified staff is also planned.

The Los Angeles * air pollution control problem differs from that of most eastern cities. No coal is burned; instead gas is used by all homes and by most apartment buildings and hotels. In summer most industrial power plants are operated by gas, while in winter large power and heating installations employ oil burners.

The greatest accumulation of smoke

* Information concerning St. Louis was furnished by John Buxell, Engineering Director, St. Louis Health Division.

* Information concerning Los Angeles was furnished by Charles L. Senn, Engineer-Director, Sanitation Bureau, City Health Department.

and other air pollution is associated with hot summer weather when visible smoke production is at a minimum. This is due to the occurrence of extreme temperature inversions coupled with an almost complete absence of wind and turbulence.

A city ordinance places certain responsibilities for air pollution control on the Los Angeles Health Department. The Air Pollution Control Division of the City Health Department is one of the divisions of the Sanitation Bureau. The division personnel consists of a director, four inspectors and a clerk-stenographer. One inspector is responsible for collecting samples and for studies of industrial fumes and gas nuisances. A second devotes his entire time to railroad smoke control. A third is concerned principally with the control of smoke from Diesel trucks. The fourth inspector is assigned to the harbor district which includes the two major oil refineries which are located in the city.

Most of the control work is based on the use of the Ringlemann chart and on organoleptic tests. The facilities of an industrial hygiene laboratory are available. Samples are collected with electrostatic precipitators and two scrubbing devices. The main laboratory effort has been directed toward attempting to isolate the particular chemical that acts as a lacrimator, since eye and throat irritations are the principal causes for complaint by citizens.

The present status of the organization of the Department of Health is somewhat questionable because of newly enacted state legislation. An amendment to the State Health and Safety Code sets up a state-wide control system concerning smoke, dust, obnoxious gases, and industrial waste fumes discharged into the air. The act provides for the creation of smoke abatement districts that would be under the direct supervision of county boards of supervisors, whose authority would supersede that of an incorporated city except where local ordinances are stricter than the state law.

It is obvious that the engineer must play an important part in the control of air pollution. The position of the engineer in this field and the knowledge necessary to function satisfactorily were discussed by Phelps and others[20] in a symposium on "The Role of the Engineer in Air Sanitation," of the American Society of Civil Engineers, 1941.

DISCUSSION

The control of atmospheric pollution is an administrative and technical problem that can be solved by engineering means. While there is no epidemiological information that will permit evaluation of the public health significance of many of the recognized air contaminants after they have been discharged into the atmosphere, their importance from the standpoint of the comfort and general welfare of the public and the individual involved cannot be overlooked.

The pollution of the atmosphere by dust, smoke, fumes, gases, vapors and mists as well as by pollen, should engage the attention of health departments at all levels of government, and qualified engineers should be called upon to meet health department responsibilities in this field of environmental sanitation.

The organization of the necessary administrative and technical activities in a health department will be governed to some extent by the facilities that can be made available. Trained professional personnel and technical facilities are required if air pollution is to be abated.

Since other departments of government too are concerned, directly or indirectly, with this problem, a coördinated program of activities is indicated.

There is an obvious need for research on many technical phases of atmospheric

control, especially on the meteorological factors affecting atmospheric pollution, methods for the instrumental measurement of odors, methods for the collection of dusts and fumes from industries, and methods for the control of air-borne pollen.

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Course on Financial Problems in the Nursing Field

A short course on Financial Problems in Schools of Nursing, Hospital Nursing Services and Public Health Nursing Agencies, 2 semester hours, will be given July 12 through 23, 1948, in the Division of Nursing Education, Indiana University, Bloomington, Ind.

This course is especially designed for directors of basic nursing curricula, directors of hospital nursing services, and directors of public health nursing agencies. It should also be of interest to board members of public health nursing agencies, hospital administrators, and college and university administrative officers who are concerned with basic nursing curricula.

Information and application forms may be secured by writing Mrs. Eugenia K. Spalding, Director, Division of Nursing Education, Indiana University, Bloomington, Ind.

The Sanitary Engineer in Hospital Construction and Maintenance*

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THE greatest hospital construction program in the history of this country was launched with the passage (by the 79th Congress) of the Hospital Survey and Construction Act (P.L. 725). This act authorizes an annual appropriation of $75,000,000 for each of five years for grants-in-aid for the construction of hospital facilities. The program is to be administered largely by the states under the general supervision of the U. S. Public Health Service. One of the provisions in the act requires the states participating in the program to regulate the operation and maintenance of the hospitals built with federal aid.

Only a few states previously regulated construction and operation of hospitals, but now, for the first time, the construction, maintenance, and operation of most hospitals will be under state regulation. In about three-fourths of the states, the health department will be the administering agency.

A comprehensive nation-wide inventory of existing hospitals and survey of needs for hospitals in the United States in 1945 revealed not only a great shortage of adequate hospital facilities, but also a serious maldistribution of existing facilities. Thus, a large segment of the total population finds itself with no hospital facilities readily available. Furthermore, the inventory revealed that many of the existing services failed to provide acceptable hospital care by any reasonable modern standard because of grossly inadequate physical plants and staffs. Consequently another large segment of our population lacks satisfactory hospital facilities.

Time will not permit, nor is it within the scope of this paper, to discuss these needs. Suffice it to say that the objective of the present program is to assist the several states to survey their needs for hospitals, to develop plans for construction of facilities for furnishing adequate hospital services for all the people, and to construct such hospitals.

Many professional skills must be combined in the development of construction plans for a modern hospital. The hospital is more than a building. It is a workshop and, as such, the building layout and the type and arrangement of equipment must be carefully planned so that the entire facility will function effectively and economically. The hospital and its equipment are the tools used by the physicians, the nurses, and allied technical hospital personnel in caring for the sick.

Obviously, those responsible for operating the hospital must have a voice in the functional planning. Equally important are the engineers and architects who translate the functional plan into a working drawing and a finished facility. The final plan must be the result of close teamwork of those representing the various and highly technical skills involved.

* Presented before the Engineering Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 9, 1947.

In the operation and maintenance of a hospital, again teamwork is essential for successful and economical service. All of the engineering problems encountered in ordinary building operation, plus many additional ones, must be solved. These are made the more difficult in that even short lapses in operation of any of the equipment or appurtenances cannot be tolerated and much maintenance must be carried out while the plant is in full operation.

The sanitary engineer should be a member of such a team. While sanitary engineering principles have long been applied in hospital construction and maintenance, the sanitary engineer has not been closely identified with hospitals to any great extent in the past. A few large architectural firms specializing in hospital design have formerly employed sanitary engineers; however, most architects do not have sanitary engineers on their staffs. In only a few of the states have architectural plans been subject to review by sanitary engineers. Likewise, in but few of the states and larger cities has the sanitary engineer been called upon to contribute his services in the operation and maintenance of hospitals.

Most of the principles of hospital sanitation are the same as are applied to other types of buildings; however, the hospital is unique in that many of the occupants are potential, if not known, active carriers of disease. Therefore, faulty design, breakdown, or lapse in proper use and operation of equipment is fraught with greater danger of spread of disease than would be the case in other buildings. Also the occupants are, for the most part, in a weakened condition and thus are more susceptible to ill-effects from faulty environment than are occupants of other buildings.

As previously stated, in both the design and operation of a hospital, the functional as well as the architectural and engineering phases must be coördinated for efficiency and economy. The sanitary engineer is in a unique position by training and experience to serve in a liaison capacity between those doctors, nurses, hospital administrators, and others responsible, on the one hand, for operating the hospital, and the engineers and architects responsible for design, construction, and equipping of the hospital on the other.

What is the extent of the sanitation problems in hospitals? Complete morbidity statistics would be the best criterion for the evaluation of sanitation problems. Unfortunately such data are very incomplete. It is known that there are numerous recurring outbreaks of diarrhea and skin infections among infants in hospitals, of food poisoning, and of cases of cross-infections which are never reported to health authorities. It is also known that many of these cases of disease result from faulty environment. That potential hazards, readily recognized by sanitary engineers, are commonly found in hospitals is indicated by many surveys that have been made. In existing buildings, serious defects in plumbing have been very common. According to a recently published report, food sanitation in the hospitals in one of our largest cities was rated lower than in the public restaurants in the same city, and in the latter was far from satisfactory. Crowding, lack of sufficient good equipment, and unsatisfactory working spaces and equipment are known in many cases to be more responsible for breaks in technique which result in spread of disease than incompetence of employees.

The sanitary engineer is largely concerned with the sanitary features of structures and equipment and their maintenance and operation. However, these are so closely related to functional and other features of design that a distinct line of demarcation cannot be drawn. The layman, and even other professional engineers, too often do not

seem to realize that the sanitary engineer is basically trained in fundamental engineering principles in common with other professional engineers in addition to his training in public health.

Many phases of professional engineering are involved in hospital design, construction, maintenance, and operation, and more than one specialty is frequently required in the design of a piece of equipment. For example, a dishwashing machine may be designed by a mechanical engineer. However, there are important sanitary implications in the design, the installation, and the operation of such a machine which must be considered in the interest of public health.

The services of the sanitary engineer in hospitals should be utilized in two ways: (1) in design, maintenance, and operation of facilities and equipment which comes more or less within the scope of his usual activities, many of which, however, have special significance in the hospital; (2) in coöperating with the medical and allied professions, in further study of potential health hazards in the environment of the patient about which little is known.

In the first category, the following items may be enumerated:

Site—Many future sanitary problems of maintenance and operation can be avoided by proper site selection. Availability of an adequate, safe water supply, proper drainage, and means of safe and economical disposal of sewage and wastes are very important factors in site selection. Insect breeding areas, sources of noise, smoke, and dust in the immediate area must be given careful consideration.

Sewage disposal—Where no sewer system is available, sewage disposal may be a particularly troublesome problem. Because of the potentially infectious nature of the sewage from a hospital, a high degree of treatment and special precautions are necessary. Large volumes of laundry and cleaning wastes may complicate the treatment problem. Operation and maintenance of these facilities likewise require special knowledge, usually not possessed by hospital operating personnel.

Plumbing—Because of a relatively large quantity of infectious material which is introduced into the drain system, plumbing is of special importance. Many special fixtures used in hospitals, and which are not in common use elsewhere, are inherently dangerous unless adequately protected. These factors make precautions against backflow doubly important. Relatively large amounts of water are used in hospitals and peak demands are high. To assure adequate and uninterrupted pressures in all parts of the building under all operating conditions requires very careful design. For the same reason, drains must be carefully planned.

Food Handling—While general sanitary principles in the storage, preparation, and handling of food and the cleansing and disinfection of utensils apply, opportunity for contamination is so great and effects may be so disastrous that unusual precautions are necessary.

Garbage and Waste Disposal—The hospital has the usual problem of the proper disposal of ordinary kitchen garbage and rubbish. Also the handling and sanitary disposal of contaminated and infectious material, which is peculiar to hospitals, presents a problem.

Lighting—In addition to the hygienic and safety aspects of general lighting, special lighting in certain areas, such as surgery, dispensary, formula room, etc., is imperative. Uninterrupted lighting in certain areas is a must item.

Heating and Ventilation—In addition to general heating and ventilation, several areas within a hospital require special consideration.

Laundry—Although commercial laundering practices are quite well standardized, and in modern practice effective germicidal action is incidental to thorough cleansing, the handling of soiled laundry requires special attention.

Sterilization Equipment—Possibility of contamination of the water supply or of the contents of sterilizers is extremely important and the very nature of this equipment makes it difficult to construct sterilizing equipment which is fully protected. Also unless the equipment is meticulously operated and maintained, complete sterilization results will not be uniformly obtained.

General Sanitation—There are many other considerations which will facilitate general cleanliness and good housekeeping, such as floor and wall construction of durable, easily cleaned material, and adequate and conveniently located hand washing and toilet facilities for employees. Insects and rodents often constitute serious problems in hospitals, and control measures, both as to construction and operation, are of great importance.

In a second category, of first importance is the study of the spread of disease from patient to patient, from patient to employee, or the reverse, within the hospital. While this is primarily the function of a trained epidemiologist, the services of a sanitary engineer should be used to a greater extent. In the past, to the writer's best knowledge, sanitary engineers have had little opportunity to assist in such investigations, although it has been common practice for many years to utilize the services of the sanitary engineer in other epidemiological studies where environmental factors were involved.

There are other items on which further information is needed. While perhaps some of these studies should primarily be conducted by professional personnel other than sanitary engineers, it is believed that sanitary engineers could render valuable assistance. No attempt is made to enumerate all such items, but the following will illustrate some of the needs:

Is general ventilation (including temperatures, humidity, and air movement control) indicated in the hospital? Is it permissible to recirculate air in the surgery, the nursery, the labor and delivery rooms, and contagious wards? Is it ever permissible to recirculate air from any one patient area to another?

In view of the limited studies that have been reported, and of the lack of conclusive evidence of substantial benefit, what policy should be adopted on use of ultra-violet ray air sterilization in surgery, nursery, contagious wards, formula room, etc.? On use of aerosols?

Should completely separate dishwashing facilities be required for a contagious section or tuberculosis section? If so, is it permissible to return clean dishes from this section to the general kitchen for serving?

Should linens from the contagious section, tuberculosis section, etc., be laundered separately from the general laundry? Should linens receive germicidal treatment before being removed from these sections to the hospital or a commercial laundry? If given no such treatment, what special precautions should be taken by personnel who handle such linen in the laundry?

Should feces and urine from known or suspected cases of intestinal infection or other infectious material be germicidally treated before discharge into a public sewer? Or into a private sewer?

What special precautions should be taken in handling and storage of patients' clothing?

Should mattresses in the contagious section be sterilized after discharge of each patient? Does laundering at low temperatures (wool 120° F.), particularly from the contagious section, provide ample protection?

Is it permissible to include food left on plates from the contagious or the tuberculosis section in garbage which is fed to hogs?

Adequate information is not available on peak water usages on which to base intelligent design of water piping and drain systems.

No public laboratory now exists where hospital plumbing fixtures and appurtenances can be tested.

These and many other questions remain to be answered.

One of the requirements for federal aid under the Hospital Survey and Construction Act is that states must regulate the operation and maintenance of hospitals receiving such aid. Under this stimulus, many of the states already have, and most of the others probably will make, provisions for licensing of all hospitals. Sanitation should play a prominent part in any such regulation and thus for the first time in many states the sanitary engineer will have an opportunity to participate in hospital planning, operation, and maintenance.

In most hospitals, various individuals

have responsibility for some phase of sanitation with little correlation or general direction. Probably very few hospitals are large enough to justify employment of a full-time sanitary engineer, yet sanitation problems are of sufficient importance in hospitals of all sizes to warrant more attention than has been accorded them in the past.

It would be desirable, wherever feasible, to have one person on the hospital staff, preferably with sanitation training, who is responsible for all phases of sanitation, with such assistance and guidance of local or state health department sanitation personnel as may be needed.

The state and local health department sanitary engineers should be available to review plans and specifications, from a sanitation standpoint, for new construction and for revamping existing structures; to make sanitary surveys of existing hospitals and advise as to physical changes and operation procedures which would improve sanitary conditions; to advise and guide personnel who are responsible for operation and maintenance of equipment; to participate in inservice training of employees; and to study means of improving hospital sanitation.

With the advent of a huge hospital construction program, coupled with the control of operation and maintenance of most hospitals by the state, the sanitary engineer is presented an opportunity to extend his services into a field with which he has not been closely identified in the past.

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Sanitary Ventilation*

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FIFTEEN years ago we demonstrated before a joint meeting of these sections an apparatus for the study of the bacterial behavior of air [1]; at the meeting ten years ago we described a method for the measurement of sanitary ventilation [2]; five years ago we discussed air disinfection in day schools [3]; this paper considers the sanitary significance of ventilation. Paradoxically, the hygienic interest in ventilation waned with rise of sanitation. Before the patterns of spread of ingested infection and inhaled contagion were clearly differentiated, the sanitary disproof of the miasmic origin of enteric infection discouraged further belief in air-borne respiratory contagion; transfer of contagious disease then was ascribed to personal contact.

Even in the most congested districts of our largest cities, contact infection was of secondary consideration in the environmental control of typhoid fever. The gradual decline in residual typhoid resulting from elimination of carriers created by water-borne infection came as a minor and unpredicted bonus, compared to the reduced rates immediately following an investment in pure water.[4] In the control of contagious epidemics on the other hand, such as measles, for instance, or influenza, where a single case can initiate a contagious chain of growing generations of infection, quarantine has until recently been the only environmental means available. Whereas the relatively static dissemination of infection in space dominates spread of typhoid fever and other water-borne intestinal infections, the propagation of air-borne respiratory contagion in time is intrinsically dynamic.

DYNAMICS OF CONTAGION

The autocatalytic nature of contagion has been expressed mathematically for theoretical epidemics in homogeneous aggregations homogeneously exposed. "Almost all workers in the analytical theory of epidemics assume that the rate at which an infection passes in a population is proportional jointly to the product of the number of persons I who are infectious and the number of persons S who are susceptible to the infection. This is called the law of mass action. Thus, if the rate of new infections be C the law is written as $C = rIS$, where r is a constant," [5] r then being the effective contact rate. This elementary equation approximately describes the dynamic pattern of intra-aggregational spread of contagion.

EFFECTIVE CONTACT RATE

In the study of contact infection, measles has played a leading role and is suggested as a natural index for study of the dynamics of droplet nuclei contagion. The value of S in the above formula is directly indicated; persons

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are assumed to be susceptible before, and immune after, having measles. Also, the value of I is generally ascertainable; direct exposure to a previous case the second week before symptoms appear can usually be detected; younger children normally contract the disease when exposed in the home.

In a quantitative study of effective contact the suburban primary school offers decided advantages: children ordinarily enter school before having measles but contract this disease before graduation; in school they are homogeneously exposed within standard classrooms; both exposure and effective contact can be established through attendance records.

By such means the effective contact rate r of measles in classrooms of three suburban primary schools during the past four years has been evaluated.[6] Among approximately 791 susceptible classmates of pupils who became ill with measles while attending classes (a unit of exposure), 87 contracted the disease after a normal incubation period. An effective contact rate of 11.0 per cent is consistent with unproductive exposures observed in schools[7] and should theoretically yield in the formula some indication of productive exposures in classrooms meeting with Pennsylvania code requirements of ventilation.

INTRAGROUP CONTAGION

As compared with 80 or 90 per cent secondary attack rate among primary school children in families reported by Chapin,[8] an effective contact rate of 10 per cent in classes may seem unimpressive, but this represents merely the static infection in a single generation. Most of the infected pupils attend class until symptoms appear, and by reëxposing their class become the infectors

THRESHOLD SANITARY VENTILATION

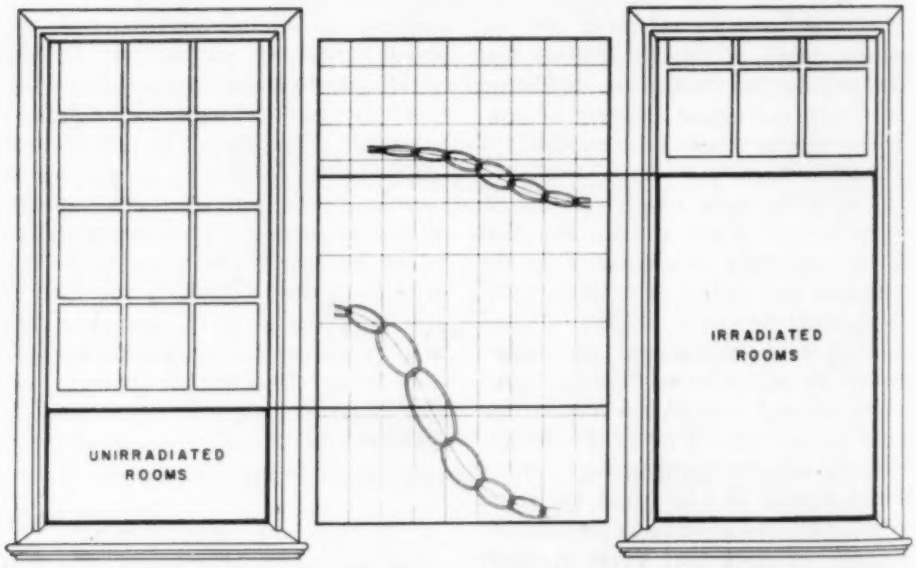

CHART I—Diagram Relating Sanitary Ventilation to Air-borne Contagion

Area inside each link of chains of generations of infection in irradiated and unirradiated schools during 1941 epidemic corresponds to percentage of susceptible pupils infected in that generation period, i.e., week and half. Center of largest link indicates number of susceptible pupils sharing ventilation at peak of epidemic when generations begin to decline, thus locating threshold sanitary ventilation per susceptible pupil. Chart on which chains are constructed described in Dynamics of Air-Borne Infection, *Am. J. M. Sc.*, 206:11–17 (July), 1943.

of a second generation. This linkage of cases in one generation to infectors of the next forges the chains of successive generations illustrated on Chart 1.

Obviously while cases exceed infectors rS is greater than unity and generations are growing, reach a "steady state" at the peak of the epidemic when $rS_T = 1$, and decline when infectors exceed cases, or rS falls below unity. The "density" of susceptible persons, S_T, at the epidemic peak, or the reciprocal of the effective contact rate, is called the "threshold," because if this "density" is not maintained by accession of persons susceptible to the disease, as when contagion becomes endemic, cases are sporadic and the disease dies out. During an epidemic the "density" theoretically falls as far below as it started above the "threshold," though our school results seem to indicate a proportional rather than an absolute relationship.[9]

To one accustomed to the erratic behavior of measles in classes such an orderly array may seem unrealistic, yet the diagonal on Chart 2, approximating the computed total infections for classes of differing susceptibility, portrays diagrammatically the pregnant fact that the percentage of susceptible pupils who contract the disease when introduced into classes increases with the number of susceptible children in the classrooms. The reality of this fact is indicated by the percentage of susceptible pupils in different grades of a large centralized school near Syracuse who contracted measles during a recent epidemic.[10] With enrolled classes of 33 pupils (an approximate average) the numbers plotted on the chart correspond with percentages of susceptible children in the grades. Since the cases contracted outside the classroom are included in these data, the plotted number of cases per 100 susceptible children exceeds somewhat the number resulting only from dynamic spread of measles within the classroom. Nevertheless it becomes evident that "crowding" is a major factor in the contagiousness of measles.

SANITARY VENTILATION

Now in terms of droplet nuclei infection, S is proportional to the amount of infected air breathed by susceptible persons; I to the amount of infection contributed to the air by the previous generation of cases; and r to the dilution of infection afforded by ventilation, or to the reciprocal of VS, where V represents ventilation per susceptible occupant (Chart 1). The substitution of these factors has proved the basic equation of the law of mass action to apply in quantitative experimental air-

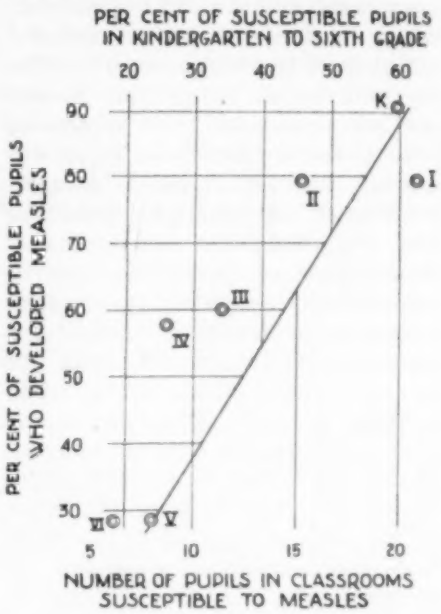

CHART 2—Increasing Percentage of Susceptible Pupils Who Develop Measles as Number of Susceptible Pupils per Classroom Increases

Diagonal approximates percentage computed with 10 per cent effective contact rate per generation. Marked circles indicate percentage of susceptible pupils in primary grades of Mexico School who developed measles in 1946 epidemic (10). Percentage of susceptible pupils corresponds to 33 pupils per class (approximate average).

borne tuberculosis in rabbits.[11] Since rS_T becomes unity at "threshold density of susceptibles," ventilation per susceptible occupant at this "density," V_T, becomes the natural sanitary unit of ventilation and the law of mass action, as applied to air-borne contagion, then becomes $CV = IV_T$. Only below threshold ventilation, or when V is less than V_T, can droplet nuclei contagion become epidemic; cases are sporadic when V exceeds V_T, and the infection dies out.

Ventilation is usually expressed as cubic feet of fresh air replacement, or cubic feet per occupant—per susceptible occupant in sanitary ventilation. Sometimes it is more convenient to express ventilation in air changes of confined atmospheres, and if a *lethe* of disinfection is defined as the bactericidal equivalent of bacterial removal by dilution with one air change (one volume pure air replacement with continuous mixing), sanitary ventilation by air disinfection can be expressed in cubic foot-lethes.[12] By principles underlying these transformations elaborated elsewhere,[2] sanitary ventilation can be measured bacteriologically by the equilibrium concentration of standard test organisms, atomized at a constant rate into an enclosed atmosphere at representative locations, determined at another representative location with and without air disinfection. Multiplying the die-away rate without disinfection by the ratio of equilibrium concentrations gives *lethes*, or equivalent air changes.

Radiant disinfection of air in primary schools has played a dominant role in the experimental study of sanitary ventilation. The number of air-suspended bacteria killed by irradiation of a dry confined atmosphere can theoretically be deduced from a generalized hypothesis combining three accepted laws: the inverse square law of radiant intensity; the Roscoe-Bunsen law of reciprocity of time and identity of exposure; and the quantum (logarithmic) law of disinfection.[13] By this hypothesis the number killed becomes proportional to the number of photons, or to ergs of radiant energy intercepted by living bacteria. If a ray be regarded as a constant stream of photons, then the number of photons in a confined atmosphere is proportional to the total lengths of the rays between the points of entrance and disappearance from the enclosed space. Dividing the volume of the room into this total length, or the sum of the products of the rays into their length, gives average intensity. Thus, radiation in watts multiplied by average ray length in feet gives total irradiation in foot-watts which, divided by room volume in cubic feet gives average intensity in watts per square foot.

This reciprocal relationship between radiant flux and distance traversed through an enclosed space is obvious with uniform light intensity. Thus, one watt of uniform parallel light, such as sunlight, traversing 10 feet of a transparent column 10 feet long and of 1 square foot cross-section, will irradiate 10 cubic feet to 10 foot-watts, or 1 foot-watt per cubic foot, giving an intensity of 1 watt per square foot. In like manner, 10 watts falling perpendicularly upon 10 square feet of a side, passing through 1 foot of this column, will also irradiate 10 cubic feet of air to 10 foot-watts, giving average intensity of 1 watt per square foot. In any position or in any form, 10 cubic feet would be irradiated by 10 foot-watts, the product of the flux into mean ray length. Regardless of the form of the space or the direction of the rays, irradiation is given by radiant flux multiplied by mean ray length.[14]

It follows from the generalized law of radiant disinfection that the greatest number of organisms suspended in a given volume of air are killed when uni-

formly exposed to a given amount of irradiation, the lethal efficiency of uniform irradiation therefore being a maximum. We were unable to irradiate large spaces uniformly but were able to devise a chamber providing uniform exposure to a point source at the center, toward which air flowed with a velocity inversely proportional to the square of the distance from the source. The product of time and intensity of exposure of air-borne organisms to the source was therefore constant at any point, and the determined foot-lethes divided by computed foot-watt minutes of exposure, or the product of average intensity by time of exposure, gave the lethal equivalent of irradiation. Against standard bacterial suspension in dry air 0.002 foot-watt minutes of irradiation in the 2537Å wave band was equivalent to a cubic foot-lethe, less than a tenth of the irradiation required in humid air, on moist agar surfaces, or in aqueous suspension.[15] If radiation in this wave band be adopted as standard lethal radiation, then a foot-watt minute of standard uniform lethal irradiation is equivalent to 500 cubic foot-lethes of standard air disinfection, or cubic feet of sanitary ventilation.

But it is not feasible to irradiate the occupied zone of a room to the desired average intensity; and, so, irradiation efficiency in practice depends upon design. Generally the amount of irradiation realized from a radiant source in an enclosed space depends directly upon mean ray length; the uniformity of irradiation of the space normally increases with mean ray length, the uniformity of exposure depending upon air circulation usually increases as rays are lengthened; and the disinfection of organisms en route from occupant to occupant approaches average disinfection as rays are lengthened. The hygienic rating of disinfection thus increases *inter alia* with mean ray length.[13]

The role of air circulation in equalizing exposure of air-borne organisms to differing intensity in ventilated spaces is little appreciated by those who have not measured radiant disinfection by bacteriologic procedures. With good design, air circulation between the occupied and upper irradiated zone, expressed in terms of the amount of recirculation of the air through a chamber uniformly irradiated with the given number of foot-watts exceeded three air changes per minute. Thus, by radiant disinfection with 6 foot-watts per pupil, more than twenty times the sanitary equivalent of standard school ventilation—exceeding threshold sanitary ventilation (Chart 1)—has been attained in experimental schools.[16]

DYNAMIC EXPERIMENT

Measles epidemics would not propagate in these schools according to the dynamic hypothesis discussed above. Records [17,16, 4, 6 *] of nine years' experience in the irradiated Primary Department of the Germantown Friends School and six in the two Swarthmore Primary Schools, as compared with four years' experience in the unirradiated Primary Department of the William Penn Charter School and the two Nether Providence Primary Schools, indicate that:

1. The effective contact rate of measles in classrooms was reduced; per hundred susceptible classmates of a pupil becoming ill with measles while attending class (unit of exposure) 11.0 contracted the disease in unirradiated schools, during the second following week, as against 3.1 in irradiated schools.

2. The dynamic spread of the measles in the school was checked; per hundred susceptible pupils of unirradiated schools more than twice, and in classrooms more than five times, as many were infected.

3. The community threshold for primary school children was raised; per hundred pupils in unirradiated primary schools, half again as many had had measles.

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* Note: presented on slides at the meeting but omitted on editorial grounds.

SANITARY SURVEY

It seems theoretically possible to control epidemics of air-borne contagion by covering dynamic foci with threshold sanitary ventilation; these foci constitute the primary sources of contagious epidemics in the community. Any attempt to tabulate the relative importance of various atmospheres encountered in experimental studies discloses a lack of trustworthy information on the essential channels of commerce in contagion. Nevertheless, in experimental design and the interpretation of epidemiological data, the relative insignificance of unblockaded channels is tacitly assumed.

Before designing a municipal water supply, the static factors which govern spread of intestinal infection, amount of pollution (I), size of aggregation (S), and effective dilution (r), must be surveyed. Control of static factors which determine effective contact rate and exposure time is not enough to prevent contagious epidemics by sanitary ventilation; dynamic factors which determine intra-aggregational reëxposure linkage of generations, and the hazard of inter-aggregational linkage of exposure within the community, i.e., the chance of introduction of infection to and dispersion from social groups, must also be evaluated. A sanitary survey of the various atmospheres breathed by aggregations under observation is required to evaluate methods of control of air-borne infection. Sanitary discrimination in the dynamic control of air-borne contagion is even more essential than in the static control of water- or milk-borne infection.

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Q Fever in Los Angeles County

Description of Some of Its Epidemiological Features

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Q FEVER has been found to occur in Los Angeles County, California, in an apparently endemic fashion, and this paper describes certain characteristics of the disease in that area.

Two naturally occurring outbreaks of Q fever are known to have taken place in the United States. The first appeared in Amarillo, Tex., in March, 1946,[1] and the second in Chicago, Ill., in August, 1946.[2] These two epidemics were alike in many respects; both were sharp outbreaks arising from occupational exposure of susceptible persons to stock being slaughtered or moving to slaughter. The attack rates were high in both instances, being over 50 per cent in the most heavily exposed groups, and the dates of onset of the cases were distributed over a 2 to 3 week period, the variation being chiefly accounted for by the spread in incubation period of the human disease.

It seemed clear from studies of the two outbreaks that infected cattle in Amarillo and infected calves or sheep in Chicago had been the source of human infection, and that transmission to slaughter-house workers had come from infected tissues and body fluids either by direct contact or by means of droplets of splattered fluids. Ticks had been very rarely seen on animals in either of these locations, and, in Chicago, cases did not tend to develop in persons associated with operations on hides, but instead were concentrated in personnel handling viscera.

Although the means by which the human beings had become infected was somewhat clarified by these studies, the manner of infection of the animals was not obvious, and it was not possible to gain a clear picture of the natural reservoirs of the disease in this country. For one reason the infectious source had long since been removed when the outbreaks occurred, and the epidemiological investigations were necessarily retrospective. The endemic area now found in Los Angeles County appears to provide suitable material for investigation of the natural reservoir problem.

The apparent lack of an insect vector in the two American outbreaks and their explosive and isolated nature seems to be different from the picture in Australia.[3]

THE OUTBREAK IN LOS ANGELES COUNTY

General Description of Area—

The cases which have been found have developed in the milk shed area of Los Angeles County. This zone is in flat land 10–30 miles southeast of the center of the city of Los Angeles. The climate is warm and dry and moderated considerably by the Pacific Ocean.*

This dairy area is one of the most concentrated in the world. There is

* Weather bureau records show that in Los Angeles since 1877 the average yearly rainfall has totaled 15.55 inches with 14.22 inches of this falling in the months from November through March. The average temperature for the same period has been 63.0° F. with monthly means varying from 55.6° in January to 71.4° in August. In 1946 the highest temperature was 95° and the lowest 38°.

little or no pasture available, and nearly all the feed is brought in from other places. The sources of the feed for the cows are scattered over thousands of miles. Although the chief item, hay, is trucked in from the nearby Imperial and San Joaquin Valley, grain comes from northwestern United States, soy beans from the mid-West, copra meal from the Philippines, and molasses from Hawaii.

Because of the high cost of feed and land, almost all of the cows are imported from areas where pasture is available. They are usually bought as at least 3 year old animals, or so-called "second calf heifers." Although most of them are raised in California in the San Joaquin and Sacramento Valleys, many come from Oregon, Washington, Idaho, Montana, Utah, and Colorado.

Because of the lack of pasture the cows are concentrated in pens at most dairies and the considerable manure which accumulates in the pens is removed by scraping it with a bull dozer to the center of the pen where it is loaded into trucks and hauled away to fertilizer plants.

The dairies themselves consist of pens, an open milking barn, a closed feed barn, and piles of baled hay protected on the top against rain. Although most of the population in the area is concentrated in towns of a few thousand, there are many residences quite close to the dairies, and there are occasional dairies in the towns. Over 400 dairies are to be found here, and few people can travel far from their homes without passing one or more of them.

Methods of Investigation—

Through the coöperation of local physicians the names of persons who had undergone recent febrile attacks were obtained. Cases of virus pneumonia were especially sought. These people were then visited, interviewed, and blood samples were taken. As might have been expected in the spring, upper respiratory infection provided the principal group of illnesses to be differentiated from Q fever. This differentiation could be done in most cases by taking a history of the disease and asking specific questions about upper respiratory symptoms. The presence of sore throat, running nose, and severe cough were valuable in making a diagnosis of upper respiratory infection. The complement-fixation test was of great help in arriving at a diagnosis of Q fever.

Complement-fixation serum tests were done with the technic described by Bengtson [4] with antigen prepared by method II [5] from yolk sacs infected with the Italian (Henzerling) strain of *Rickettsia burneti*. Results are given as the highest dilution at which 3+ to 4+ fixation was seen. Samples of blood collected in California were shipped by air mail to the laboratory in Bethesda, Md., where the sera and clots were separated. The clots were used when indicated for attempted isolation of rickettsiae. Certain precautions were taken for shipment, stoppers were fastened down securely with adhesive tape in order that they could not be loosened by the low pressures encountered in air transport, and the mailing containers were packed tightly with cotton in order to prevent breakage.

The Diagnosis of Clinical Disease in Human Beings—

Table 1 lists the clinical cases of Q fever found by preliminary investigations. The patients seen by physicians not familiar with Q fever were ordinarily diagnosed as "virus" or "atypical" pneumonia. Pneumonitis was demonstrated when roentgenograms were done.

The diagnosis of Q fever in each case was based on a typical clinical history with confirmatory laboratory findings. The typical clinical history was the same

TABLE 1

Human Cases of Q Fever

No.	Age	Sex	Pneumonitis	Days of Fever	Date of Onset	Complement-Fixation titer	Date Sample taken	Remarks
1	62	F	By x-ray	?	11–20	128	5–25	No definite exposure to dairies recalled.
2	51	M	By x-ray	11	11–25	128	6– 7	Had visited small farms.
3	31	M	By x-ray	21	12–28	128	5–27	Visited dairy occasionally.
4	35	M	By x-ray	10	2–6	128	4–28	Visited dairies frequently.
5	29	M	By x-ray	9	2–11	256	5–26	Visited dairy about 3 weeks before onset.
6	15	M	Physical findings and bloody sputum	21	2–23	512	4–28	Frequently played around dairy.
7	45	M	Physical findings	6	4–6	64	5–21	Had visited dairies.
8	32	F	Physical findings and bloody sputum	10	4–13	512	4–28	Home 100 yards from several dairies.
9	27	F	By x-ray	12	4–20	512	6–4	Home 100 yards from dairy.
10	30	M	By x-ray	12	4–24	128	5–22	Two dairies across street.
11	28	M	By x-ray	11	4–26	0	4–30	Visited dairy 1 27 days before onset.
						64	5–16	
12	50	M	By x-ray	12	5–1	128	5–21	Cows kept in field beside house.
13	35	F	Physical findings	6	5–10	64	5–17	Home 200 yards from dairy.
						128	5–21	
14	36	M	Physical findings	7	5–14	0	5–16	No definite exposure to dairies recalled.
						512	6–5	
15	26	F	No x-ray. No physical findings of pneumonitis	10	5–15	4	5–23	Wife of Case No. 10.
						512	6–1	
16	30	M	By x-ray	8	5–20	0	5–26	Home 100 yards from several dairies.
						512	6–5	
17	39	M	By x-ray	10	5–22	0	5–28	Home surrounded by dairy pens.
						128	6–2	
						128	6–9	

as has been described by others. The onset was acute with fever, headache, chills or chilly sensations, and body aches and pains. Cough was frequently complained of but was not a prominent symptom. The sputum which was sometimes produced was at times blood-tinged. Chest pain was common and was usually of a lateral distribution, although a feeling of substernal congestion was frequent. Physical examination of the chest often revealed little of note except perhaps suggestive findings. Respirations were elevated when pneumonic involvement was extensive. Roentgenography revealed a pneumonic process which was usually diagnosed as "atypical" pneumonia when patchy, and "early lobar" pneumonia when diffuse. The leucocyte count tended to be normal or slightly elevated. The illness ran a course of 1 to 3 weeks' fever with prolonged convalescence especially in older patients. No deaths were found which could be attributed to Q fever.

Many of the patients had recovered when first visited and the criteria of diagnosis had then to be a typical clinical history and the presence of specific complement-fixing antibodies. When patients were seen in the acute stage, blood was obtained, so that a rise in antibody titer could be shown with a later specimen. In addition the clot from the acute stage blood was inoculated into guinea pigs in an attempt to isolate *R. burneti*. It is felt that the diagnosis was firmly established by the demonstration of a marked rise in antibody during the illness or by the isolation of the etiologic agents.

Isolation of *R. Burneti* into guinea pigs was successful in cases No. 8, 11, 14, and 16. The strains were also es-

tablished in yolk sacs of hens' fertile eggs by passage from guinea pigs.

Epidemiological Features of the Clinical Cases in Human Beings—

Table 1 shows that the age of the clinical cases studied varied from 15 to 62 years. Twelve males were involved, as compared to 5 females. The cases occurred from November, 1946, to May, 1947, and were still occurring in October, 1947. It seems reasonable to assume that Q fever has been occurring here for some time. As yet no seasonal incidence is apparent.

The striking feature of the epidemiology is its peculiar relationship to dairies. It can be seen that in all of the cases except two a history was obtained of having visited dairies or of having lived near them. And, as has been mentioned, it is difficult to travel far in this region without passing cow pens. Yet none of the patients had been actually employed by a dairy, and most of them had probably not come within 10 to 20 feet of a cow, so that their contact with cows was more remote than that of the dairy workers which are considered next.

Serologic Studies of Persons Not Clinically Ill With Q Fever—

We have examined sera of many persons from outside the laboratory in the past and our experience has been that until actual cases of Q fever were encountered in epidemics, the sera were uniformly negative. The sera of patients undergoing Q fever have given clear-cut results, most patients developing antibodies to high titer during the course of their illness. However, the results on sera of persons from the milk shed area were distinctly different, as will be seen from examination of Tables 2, 3, and 4.

TABLE 2

Complement-fixation for Q Fever on Sera of Dairy Workers

No.	Time in Area	Time Worked in local dairies	Titer
1.	29 yrs	29 yrs	16
2.	24 yrs	24 yrs	0
3.	22 yrs	22 yrs	8
4.	18 yrs	18 yrs	0
5.	15 yrs	15 yrs	0
6.	14 yrs	12 yrs	0
7.	12 yrs	12 yrs	0
8.	10 yrs	10 yrs	0
9.	7 yrs	7 yrs	0
10.	1½ yrs	1½ yrs	16
11.	1½ yrs	1½ yrs	32
12.	1 yr	1 yr	0
13.	1 yr	1 yr	32
14.	8 mos	8 mos	32
15.	6 mos	6 mos	0
16.	8 mos	6 mos	8
17.	2 yrs	1½ mos	0
18.	—	—	4
19.	—	—	8
20.	—	—	4

Table 2 shows the results of complement-fixation tests with sera of dairy workers. Twenty samples were tested, and 10 found positive in some dilution. Since these men had probably acquired

TABLE 3

Complement-fixation for Q Fever in Persons Ill with Oother Diseases

	Total Sera	Number Negative	Number Positive	End Titer 4	8	16	32
Residing within 100 yards of a dairy	8	4	4	1	0	1	2
Not residing within100 yards of a dairy	6	6	0	0	0	0	0

TABLE 4

Complement-fixations for Q Fever on Specimens Submitted for Routine Serologic Test for Syphilis

Source	Total specimens submitted	Number negative	Number positive	End Titer 4	8	16
Milk Shed, L. A. County	166	161	5	2	2	1
District of Columbia	96	96	0	0	0	0

their antibodies in the course of their work, the results indicate the rate of exposure, since some of them had developed antibodies in less than one year's experience. The dairy workers with negative sera could have become so after having been positive at an earlier date, so that it is possible that more of them had been positive at one time or another. We have observed that after laboratory-acquired Q fever in human beings the sera revert to negative in the course of several years.

Table 3 shows the complement-fixation results with sera gathered from persons who had been ill with diseases which were presumably not Q fever. Although they gave histories of upper respiratory infections, blood samples were obtained and their sera were examined for Q fever antibodies. Though the number is small, the results show that sera of people living near the dairies, but not in actual contact with the cows may also show Q fever antibodies. Some of those with positive serology said they had never visited the dairy near which they lived.

In Table 4 are shown the results on sera obtained from the Los Angeles County and the District of Columbia laboratories. They were in both cases routine sera found negative in serologic tests for syphilis. Those from Los Angeles County were selected because the donor's residence had been given in the general milk shed area. Actually most people living in this area do not live close to the dairies, since the human population is concentrated in towns, and the dairies are for the most part distributed about the countryside. Of the 166 specimens examined, 5 were found positive in low dilution. The 96 sera from the District of Columbia were all negative. The incidence of positive sera from the Los Angeles County milk shed is low, 3.0 per cent, but none were expected from previous experience.

The results of Tables 2, 3, and 4, when considered together, show that positive complement-fixations for Q fever can be expected in this area on sera of persons not undergoing obvious attacks of Q fever. Although some of the persons with positive sera were not questioned about previous illness, many were questioned at some length, and no definite history of Q fever could be obtained.

Serologic Studies on Sera of Cows—

We have previously examined, by the complement-fixation test for Q fever, bovine sera from two general areas. Nearly sixty sera of beef cattle from Texas and states adjacent to the Texas Panhandle were found negative last year, and more than sixty sera from Maryland milk cows were found negative at the same time.

It was possible to sample the cows at 9 different dairies in the Los Angeles milk shed area and to study the blood sera for complement-fixing antibodies for Q fever. The dairies were distributed across the milk shed area. Table 5

TABLE 5

Complement-fixation Results on Sera of Cows from Several Dairies in Area

Dairy No.	Number of sera	Number Negative	Number Positive	End Titers 4	8	16	32	64	128	256	512
A	9	9	0	0	0	0	0	0	0	0	0
B	13	11	2	0	1	0	0	1	0	0	0
C	12	11	1	0	0	0	1	0	0	0	0
D	20	18	2	0	2	0	0	0	0	0	0
E	16	10	6	0	0	2	2	1	1	0	0
F	15	12	3	0	0	0	0	0	1	1	1
G	15	14	1	0	0	0	1	0	0	0	0
H	15	14	1	0	0	0	0	1	0	0	0
I	15	10	5	0	1	1	0	1	1	1	0
Total	130	109	21	0	4	3	4	4	3	2	1

gives the results. In all, 130 sera were examined and 21 were found positive, 10 of them in dilutions of 1:64 or higher. The incidence of positives, 16.2 per cent, found in this survey varied from one dairy to another and was highest in dairy E and lowest in dairy A. The significance of the difference in the rates is probably not great, and there was some evidence that Q fever infection was present in all of them. For example, in dairy A several of the dairy workers were found to have positive sera. Other dairy workers of Table 2 were employed at dairies E, F, G, H, and I, and the patient in Case 11 visited dairy I 27 days before he became ill.

DISCUSSION

Although only 17 cases are listed in Table 1, it is likely that many more cases have occurred in the Los Angeles area. The complete reporting of Q fever must depend upon increased awareness of its presence by the physicians of the area, and the adequate use of laboratory diagnostic facilities. Most of the persons listed in Table 1 were patients of a few physicians who were especially interested in discovering cases.

The patients listed in Table 1 as having undergone clinical illness with Q fever did not have intimate contact with cows, and this point merits comment since it tends to cause confusion. Many people deny contact with cows except when they have touched them. As has been stated the "contact" of the persons in Table 1 arose from their living near dairies or having visited them within the incubation period of the disease.

None of the clinical cases found developed in dairy workers, yet evidence for the frequent infection of dairy workers was obtained by serological studies. Half of the 20 dairy workers sampled showed complement-fixing antibodies for Q fever rickettsiae, and it seems likely that others of them had been infected at one time or another, since positive to negative conversion may take place within a few years. Many of those having antibodies for Q fever did not give histories of illness particularly suggestive of Q fever. It thus appears that the dairy workers had undergone mild or inapparent attacks of Q fever. Mild attacks are known to occur.[2, 6, 7, 8]

An apparent inconsistency arises from these considerations, that is, the persons with what was apparently the greatest exposure seemed to escape clinical illness. This situation could have arisen from sampling methods, since if mild Q fever were common and severe Q fever rare in this area, and if exposure to the disease were not too greatly concentrated in the dairy workers, the severe cases could have been found in non-dairy workers simply because of their numerical superiority. An alternative explanation also appears possible, namely, that the exposure of the dairy workers is such that it tends to result in the mild disease rather than the severe form.

The complement-fixation results in Tables 2, 3, and 4 indicate that there has been considerable past exposure to Q fever in certain groups of persons in this area. This has apparently resulted in immunity in many cases. In addition it gives rise to difficulties in making a definite diagnosis of Q fever in a particular illness, since the demonstration of complement-fixing antibodies for Q fever rickettsiae in a single specimen taken in the course of a febrile illness is not sufficient to establish the etiology of the fever as being *R. burneti*. In this study, in order to investigate illness which had taken place in the near past we made the diagnosis of Q fever on a single positive serum when the patient had undergone an attack of "atypical" pneumonia. However, whenever the patient could be seen in the acute stage, a sample of blood was taken then, thus making it possible to establish the diagnosis of Q fever with considerable cer-

tainty by demonstrating a rise in antibody in the course of the disease, or by isolating *R. burneti* from the patient's blood, or by both means.

Q fever in the cows of this area appears to be common as judged by the results of the complement-fixation test. It does not appear possible to state definitely that the cows are the source of human Q fever infection since the possibility remains that the same source infected both cows and human beings.

The origin of most of the cattle in other regions suggests the possibility that the infection giving rise to the positive complement-fixations might have been acquired outside the Los Angeles area. However, 3 of the cows positive by complement-fixation were born and raised in the area; their titers were all low (1:8), but such titers seem to be significant, since the cow sera studied heretofore have been completely negative.

The negative results with bovine sera from the Texas Panhandle and adjacent areas and from Maryland were obtained in the course of investigations of an agglutination test using *R. burneti* suspensions as test antigen. Derrick, Smith, and Brown have reported 13 of 879 Australian dairy cows showing agglutinins for Q fever.[9] However, the agglutination test as we performed it appeared unreliable and of 500–600 bovine sera studied about 60 per cent gave positive agglutination tests. We concluded that the agglutination results we saw were most likely nonspecific and not related to past infection with *R. burneti*.

It would be of interest to know when Q fever infection appeared in Los Angeles County, but it seems that we have little evidence on this point. The first case of Q fever in Table 1 was in a patient whose illness started November, 1946. It is quite possible that cases have been occurring for some time, and it is doubtful if the presence of infection would have become known now had it not been for the recent interest in Q fever because of outbreaks elsewhere in the country.

It should be noted that few if any ticks are present on the cows in the Los Angeles milk shed, and that the fly population is kept low by DDT spraying of barns and the frequent removal of manure.

SUMMARY

1. Q fever has been found occurring in an apparently endemic manner in the milk shed area of Los Angeles County. Most of the cases lived near or visited dairies.

2. Serological studies revealed that many people who did not give histories of clinical attacks of Q fever showed complement-fixing antibodies for Q fever. Half of the dairy workers and people living near dairies showed specific antibodies.

3. Of 130 sera of cows in the area 21 showed antibodies for Q fever, some in high titer.

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presence of Q fever in the area was discovered.

Much help was freely given by the personnel of the Los Angeles County Health Department. The coöperation of the local physicians is greatly appreciated, as is the assistance of the dairy owners.

ADDENDUM

Since this paper was submitted for publication, Huebner, Jellison, Beck, Parker, and Shepard have published the results of further investigations at Los Angeles. *Pub Health Rep*, 63:201 (Feb. 13), 1948.

They report the finding of *R. burneti*, the causative agent of Q Fever, in the raw milk of 4 dairies in Southern California. Pasteurization results under field conditions, while incomplete, apparently rendered naturally infected milk non-infectious for guinea pigs. Available epidemiological evidence does not indicate that the drinking of milk was the cause of a majority of the cases thus far studied.

Silver Nitrate Still the Preferred Drug in Ophthalmia Neonatorum

In the April issue of the *Woman's Home Companion*, Miriam Zeller Gross, in an article entitled, "Can Present Laws Blind Your Baby?" proposed that the use of silver nitrate be discarded as a method of preventing the infection of eyes of the new-born. She proposes that penicillin be substituted because of its proved value and proved harmlessness.

Among the protests of the scientific accuracy of the article is a report released by the New York Academy of Medicine, on request for an opinion by the Commissioner of Health of New York City. He had some months ago asked the opinion of the Academy about the wisdom of amending the New York City Sanitary Code requirements for silver nitrate.

A digest of Academy opinion follows:

In preventing infection of the baby at birth, both penicillin and silver nitrate are safe to use when the solutions are prepared carefully and applied properly, a committee of specialists reported. There is no evidence that 1 per cent or even 2 per cent solutions of silver nitrate, which are those used in the prophylaxis of ophthalmia neonatorum, have ever damaged vision.

Bacteria that cause gonorrhea and pneumonia are most likely to cause blindness in the baby, and the concentration of penicillin most effective to halt the growth of these bacteria is not yet known.

In view of the present available evidence of the relative effectiveness of silver nitrate, silver acetate, and penicillin in the control of ophthalmia neonatorum, it would seem that existing laws requiring the use of silver nitrate should not at the present time be revised by the substitution of penicillin for silver nitrate.

Relative Efficiency of the Open and the Confidential Method of Reporting Causes of Death*

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SINCE January 1, 1947, the confidential method of reporting deaths from natural causes has been in use in all five boroughs of New York City. The system had been tried on an experimental basis in the borough of Manhattan during the preceding eight years. The legal and ethical bases for the use of the confidential certificate have been previously reported.[1]

Primarily on these bases but also because of its approval by the Committee on Public Health Relations of the New York Academy of Medicine and the five county medical societies of the city, the method was extended to all boroughs. During the first few years of its use in Manhattan, there appeared to be some indications of its statistical superiority, but no scientific study had been made by means of which its relative efficiency could be impartially evaluated. Accordingly, in November, 1942, Dr. Ernest L. Stebbins, then Commissioner of Health, secured a grant from the New York Foundation for the purpose of making such a study.

HISTORY OF DEATH CERTIFICATION

The registration of causes of death originated with a view to controlling the spread of pestilences, and from the start the statistics of death, by cause, have served as a basis for public health activities. Because of this fact, the registration of vital events in the United States has generally been made a function of state and local health departments.

The ethical aspects of medical certification have been the subject of controversy to a much greater extent in Europe than in the United States. In some countries of Europe, this controversy resulted in the refusal of the attending physician to participate in the reporting of a death or the cause thereof. Switzerland has been a notable exception. More than a half century ago, the Swiss developed a confidential method of reporting causes of death which gave the public authorities information essential to the protection of the public health and at the same time guaranteed the preservation of professional secrets.

In the United States, little if any con-

* This paper presents the findings of the study made by the New York City Department of Health in 1943–1944. The study was carried on under the direction of the late Thomas J. Duffield and the author, with the assistance of Marjorie T. Bellows, Louis Weiner, and their staffs in the Bureau of Records and Statistics. A Statistical Advisory Committee guided the department in the conduct of the study and in the appraisal of the results. The committee consisted of the following members:

Ernest L. Stebbins, M.D., Commissioner of Health, Chairman

Alfred Angrist, M.D., Pathologist, Jewish Memorial and Queens General Hospitals

E. H. L. Corwin, Ph.D., Executive Secretary, Committee on Public Health Relations, New York Academy of Medicine

Godias J. Drolet, Statistician and Assistant Director, New York Tuberculosis and Health Association

Haven Emerson, M.D., Emeritus Professor of Public Health Practice, Columbia University, and Member, Board of Health

John W. Fertig, Ph.D., Professor of Biostatistics, Columbia University

Hugo Muench, M.D., Fellowship Adviser of The Rockefeller Foundation

sideration was given to the question of the confidential nature of medical diagnoses until recent years. A start toward evaluating the problem in this country was made in 1933–1934 when Nicoll and Bellows [2] showed that syphilis and alcoholism were understated in the Westchester County, New York, mortality statistics. A voluntary system of confidential reporting, which they instituted, was discontinued after several months when found unsatisfactory.[3]

METHODS OF REPORTING CAUSES OF DEATH

There are two fundamental methods by which causes of death may be reported: (a) the open method, and (b) the confidential method.

(a) *The Open Method*—In the United States, it is the general practice to report deaths on a certificate which requires the following: (i) the name of the deceased, (ii) personal particulars identifying the deceased, (iii) the medical certificate of death, and (iv) information regarding the date and place of burial or cremation. In the medical certificate of death, the physician is expected to state the period of his attendance upon the deceased, the medical diagnoses of the principal and contributory causes of death, the duration of those conditions, autopsy findings, and operations performed.

(b) *The Confidential Method*—In an effort to improve the method of reporting, and at the same time to preserve the essential features of the American procedures, the late Thomas J. Duffield, then Registrar of Records in New York City, in 1936 proposed a confidential system of death certification. After considerable discussion, the Board of Health approved the introduction of the Physician's Confidential Medical Report as an experiment in the borough of Manhattan, commencing January 1, 1939.* Previously, in the entire city, the open form was used, and this form or a similar one was used in the other four boroughs through December 31, 1946.

Objections to the open form, which are overcome by the confidential certificate, arise from the fact that it has become the practice of custodians of vital records in the United States, as elsewhere, to issue copies of official records of death to relatives for use in the settlement of the affairs of the deceased.

In New York City, for more than a quarter of a century, the certified copies of death certificates issued by the Department of Health have been negative photostatic reproductions of the face of the certificate. Under such circumstances, it is possible that physicians, in keeping with their feelings regarding the ethics of their profession and the law governing professional secrecy, have not always recorded the complete diagnosis of the cause of death to the best of their knowledge and belief. The primary reason for withholding information appears to be the fact that the family physician may not wish to record a diagnosis which offends survivors because it reflects unfavorably upon the memory of the deceased.[2, 3] The fact that a death certificate is of access on legal order and that a copy may be required for the settlement of the estate of the deceased are not thought to be nearly so important in promoting incomplete reporting.† Regardless of the reasons, in stating anything less than the full truth, physicians withhold information that may be im-

* The confidential method, at that time, was also used by Switzerland, and by the cities of Nürnberg, the Hague, and Amsterdam, and to a certain extent in England and Wales [4]; it has since been put into use by the Province of Quebec, Canada.[5, 6]

† The experience of one large insurance company has consistently shown that physicians have no intent to withhold information which can be used for scientific or statistical purposes. A comprehensive published report for their 1911–1914 experience revealed that through supplementary inquiries to physicians the number of deaths attributed to such significant titles as alcoholism, syphilis, and gonococcus infection were increased by 21, 78, and 130 per cent, respectively.[7] Similar results are evident from unpublished data for recent years.

portant in the planning and administration of public health and related programs.

With the confidential form of reporting, a copy of a death record includes only the following: (i) the name of the deceased; (ii) personal particulars identifying the deceased; (iii) certification that the death occurred on a given date and was due to natural causes, and (iv) information regarding the date and place of burial or cremation. No part of the Physician's Confidential Medical Report, including the causes of death, duration of diseases, and related information appears on the copy of the death record issued to relatives of the deceased. Thus the contents of the confidential medical report are not divulged.

PLAN OF THE SURVEY

In 1943 the Department of Health initiated a study, jointly sponsored by the Department of Hospitals, to evaluate the comparative statistical efficiency of the two methods of reporting causes of death in New York City. A pilot study of 955 deaths which occurred in municipal hospitals in 1941 was completed in the early months of 1943. On the basis of these preliminary statistics, the final plan for the study was formulated, and collection of data started on July 1, 1943.

Objective—The objective of the study was *to ascertain whether the confidential method of reporting causes of death resulted in statements of cause of death more nearly in agreement with the physician's knowledge and belief at the time the certificate was filled in than did the open method.* It should be noted that the study was not concerned with the accuracy of a physician's knowledge. No method of reporting is able to eliminate diagnostic errors which result from limited clinical examination or medical knowledge; for example, cases in which no operation, biopsy, or other special laboratory tests are performed.*

Criterion—Not all discrepancies between what the physician knows and what he actually records on the death certificate are due to wilful alteration of the known facts. Carelessness, lack of uniformity of definition of terms, and personal interpretation of their meaning are important factors contributing to such differences.[10-13] To some extent, these differences may be minimized by education and by proper formulation of the questions on death certificates.[14, 15] Some of these errors were eliminated from the study, by classifying the various individual titles of the 1938 revision of the *International List* into 17 diagnostic groups. Thus only changes from one group to another were considered significant.

In consideration of the above factors, the basic criterion of the study was established as the *correlation between the primary cause of death selected from the statement of cause of death reported to the Department of Health and the primary cause selected from the diagnoses abstracted from the medical case history* (selected and coded according to the *Manual of the International List of Causes of Death,* Fifth Revision, and *Joint Causes of Death,* Fourth Edition, 1939).

The secondary criterion consists of *comparison of the relative frequency with which the following seven conditions (existing or preëxisting) were mentioned anywhere in the case history and on the death certificate: (a) alcoholism, (b) cancer, (c) diabetes mellitus, (d) mental disease, (e) puerperal sepsis, (f) syphilis, and (g) tuberculosis.*

The latter criterion was adopted since it appeared desirable to ascertain the relative completeness with which statements are made on the two certifi-

* Because of the deficiencies in clinical diagnoses as revealed by comparisons with autopsy findings,[8, 9] since June 1, 1947, all autopsy findings for deaths which occur in New York City are reported to the Department of Health on a supplementary confidential medical report.

cates. For example, mental disease is rarely the primary cause of death, but is it more accurately reported as a contributory or associated cause on the confidential death certificate than on the open? Moreover, a sub-sample of 89 cases, independently abstracted by four medical workers, indicated that any method of analysis must assume an indeterminate difference in the primary cause of death due solely to the process of abstraction (individual differences of opinion, etc.). Personal variations are practically eliminated from the data obtained for the conditions specified above (check list). However, if any findings in favor of the confidential certificate are disclosed by these data and not from those on the primary cause of death, they cannot be conclusively attributed to the method of certification. This arises from the fact that the Physician's Confidential Medical Report provides more space for recording the statement of cause of death than does the open certificate.

Selection of Sample—Approximately 28 per cent of the deaths in New York City occur among persons who receive medical attention prior to death and who die at home. These cases afford the best example of the physician-family relationship and might be expected to provide fruitful information for evaluating the efficiency of the confidential certificate. However, no objective method is available for analyzing these cause-of-death statements. The difficulty arises primarily from the fact that case histories in the private practitioner's office are highly incomplete, lack uniformity, or are nonexistent.* As a result, the proprietary hospitals were selected for study, since the role of the physician in these hospitals most closely approximates that of the private practitioner. In contrast, physicians in municipal hospitals do not have such close personal relationship with their patients. It was expected, therefore, that differences due to wilful alteration of the known facts would not be as great for municipal as for proprietary hospitals. Thus the municipal hospitals were included in the study to serve as a means of interpreting the findings for the proprietary hospitals.†

All proprietary hospitals licensed by the General Inspector's Office of the Department of Hospitals on July 1, 1943, which had been in operation during 1937–1939 and 1941, the period covered by the study, were included in the sample. Nine hospitals — Bellevue, Harlem, City, New York Cancer, and Goldwater Memorial in the borough of Manhattan, and Coney Island, Kings County, Queens General, and Lincoln in other boroughs—were selected for study of municipal hospitals; restricted, however, to deaths reported during January and February of the study years. Because of the small number of deaths involved, the borough of Richmond was not included in the study.

Each borough office of the Department of Health maintains a cross-index file by place of death for all deaths which are reported within the borough. The deaths which occurred in the hospitals selected for study were easily identified from these files. Cases certified by the medical examiner's office were then eliminated by inspection of the death certificates.

Procedure—The Department of Hospitals, which by law is authorized to license and to control the practices of proprietary hospitals, was most helpful in securing access to the hospital records. Dr. Edward M. Bernecker, Commissioner of Hospitals, wrote to the

* The completeness with which syphilis and pulmonary tuberculosis are mentioned on these death certificates could be evaluated by checking the certificates for residents of the city against the department's rosters of known cases. Of much greater value for this and similar purposes, however, it would be desirable to add to the death certificate an item requesting the date and place of latest hospitalization (for deaths not occurring in institutions).

† Voluntary hospitals, which operate under approval of the State Department of Welfare, were not included in the study.

superintendent or proprietor of each hospital requesting his coöperation and explaining the purpose of the study. Each hospital was then contacted by the Department of Health, supplied with a list identifying the deceased included in the study, and appointments scheduled for the abstraction of the case histories.

A simple form was used to collect information; one copy was filled in for each death certificate and another for the corresponding hospital case history. The information was copied from the death certificate exactly as it was originally reported. Supplementary information in regard to causes of death, operations, special laboratory tests obtained through inquiries by burial desk clerks, nosologists, or from special autopsy reports, which is added to the back of the certificate, was not included as a part of the death certificate abstract. All of this work was carefully checked to detect clerical errors.

In preparing the abstracts of hospital case histories, the medical field worker was instructed to "assume that he is the physician called upon to fill out a death certificate and that his knowledge of the deceased is limited to the information found in the hospital case history." Only information available at the time the certificate was filled in was considered in recording the principal and contributory causes of death and using the check list. This information generally consisted of the final discharge diagnoses (excluding autopsy findings made available after the death certificate was executed *), results of laboratory tests, operations, observations during illness, and previous history. Since it was possible that knowledge of the death certificate information might influence the abstractor in spite of all efforts to use unbiased judgment, the information from the hospital case history was abstracted onto a blank form, which was not collated with the death certificate abstract until each form had been individually processed and coded.

It was not practical or possible to verify the accuracy of all hospital case history abstracts. Moreover, it was recognized in planning the study that the abstractor's personal interpretation of the meaning and importance of conditions would have a significant bearing on his selection of the causes of death. Nevertheless, it was felt desirable to evaluate the completeness of the cause-of-death statements, including the check list data, and the frequency with which non-medical errors (use of incorrect chart, etc.) were committed. Accordingly, a sub-sample of cases from proprietary hospitals was checked by a Department of Health physician. Additional cases from both proprietary and municipal hospitals in which errors appeared possible were checked against the department's rosters of known syphilis and tuberculosis cases, or with responsible physicians in the hospitals in which the deaths occurred. Finally, all cases were reviewed by a physician of the department and questionable cases passed on by a physician of the Statistical Advisory Committee. Among the 7,330 abstracts of hospital case histories, several were adjusted by these methods. While not all errors may have been detected, it was evident that the data were sufficiently accurate for the purposes of the study.

COMPLETENESS AND REPRESENTATIVENESS OF THE DATA

A total of 15,000 cases was selected for study, 6,492 in proprietary hospitals, and 8,508 in municipal hospitals. Preference was given to completion of the work in proprietary hospitals, and

* It is recognized that it may not always have been possible to ascertain whether or not preliminary findings from autopsy were known to the physician at the time he signed the death certificate, especially in municipal hospitals. Analysis of the data, however, reveals no evidence of significant differences in the findings between autopsied and not autopsied cases.

TABLE 1

Primary Cause of Death, Death Certificates and Case Histories Compared, All Proprietary and Municipal Hospital Deaths Included in Study*

Cause and International List Number	Diagnostic Group	Total Hospital Case History	Number of deaths assigned according to cause-of-death statements on death certificates: A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Diagnostic Group
All Causes		7330	230	77	57	1236	129	340	27	1954	641	354	37	71	787	221	1	2	1166	
Tuberculosis, 13–22	A	226	204	1	...	...	...	3	...	8	6	1	...	...	2	1	...	...	...	A
Syphilis, 30	B	141	13	66	2	2	...	3	...	35	8	...	...	...	7	1	...	...	4	B
Other infectious and parasitic diseases, 1–12, 23–29, 31, 32, 33b, 34–44	C	58	...	...	44	1	...	...	...	3	2	...	...	...	2	1	...	...	5	C
Cancer, 45–55	D	1229	2	...	...	1176	9	1	...	14	7	1	...	...	15	3	...	...	1	D
Non-malignant tumors, 56, 57	E	115	...	1	...	11	84	...	...	4	1	2	...	...	1	9	...	...	2	E
Diabetes, 61	F	394	...	...	...	3	1	318	...	54	10	1	...	...	4	1	...	...	2	F
Alcoholism, 77, 124a	G	54	1	...	...	1	...	...	23	3	7	...	...	...	16	...	...	...	3	G
Cardiovascular-renal diseases, 58, 83, 90–103, 130–132	H	1883	3	7	6	14	2	8	1	1691	86	2	...	2	21	11	...	1	28	H
Respiratory diseases, 33a, 104–114	I	565	3	...	1	2	1	4	1	57	479	...	...	...	7	1	...	...	9	I
Appendicitis, 121	J	406	...	...	...	...	12	...	...	3	1	344	...	...	44	1	...	...	1	J
Puerperal infection, 140, 142a, 145a, 147	K	50	1	...	...	...	...	...	...	2	...	2	32	11	1	...	...	...	1	K
Other puerperal causes, 141, 142b, 143, 144, 145b, 146, 148–150	L	72	...	...	...	...	...	...	...	8	1	...	5	57	...	...	...	...	1	L
Other diseases of the digestive system, 115–120, 122, 123, 124b, 125–129	M	742	1	1	...	19	6	2	1	38	7	1	...	...	650	6	...	1	9	M
Other diseases of the genito-urinary system, 133–139	N	219	1	1	1	4	10	...	...	7	2	...	...	1	6	186	...	...	...	N
Chronic poisoning and violent or accidental deaths, 78, 79, 163–198	O	13	...	...	...	...	1	1	1	6	2	...	...	...	1	...	1	...	...	O
Ill-defined and unknown, 199, 200	P	9	...	...	...	2	1	...	...	5	...	...	...	...	1	...	...	...	...	P
All others, 59, 60, 62–76, 80–82, 84–89, 151–162	Q	1154	1	...	3	1	2	...	...	16	22	...	...	...	9	...	...	...	1100	Q
Diagnostic Group			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	

Number of deaths assigned according to diagnoses in hospital case histories

* Coded according to the *Manual of the International List of Causes of Death* (Fifth Revision) and *Joint Causes of Death* (Fourth Edition), 1939.

TABLE 2

Per cent Ratio of (A) Number of Deaths Assigned to Primary Cause from Cause-of-Death Statements on Death Certificates to (B) Number Assigned from Diagnoses in Hospital Case Histories *

Cause and International List Number	Grand Total (1)	Municipal Hospitals: Total (2)	Municipal Hospitals: Non-White (3)	Municipal Hospitals: White (4)	Proprietary Hospitals: White (5)	All White Decedents: Total (6)	Sex: Male (7)	Sex: Female (8)	Age: 0–14 (9)	Age: 15–44 (10)	Age: 45–64 (11)	Age: 65–74 (12)	Age: 75+ (13)	Certifying Physician Manhattan Proprietary and Bellevue Hospital White Decedents—1939 and 1941 Excluding Deaths due to Accidental Causes: Total (14)	Attending Physician (15)	Resident (16)	Interne (17)	Other (18)
Tuberculosis, 13–22	101	101	112	97	104	100	98	103	†	104	104	78	†	108	†	119	108	90
Syphilis, 30	55	53	55	52	57	54	58	40	†	38	48	56	90	59	†	25	60	82
Other infectious and parasitic diseases, 1–12, 23–29, 31, 32, 33b, 34–44	98	80	†	67	102	93	94	91	80	90	110	100	†	115	†	†	†	†
Cancer, 45–55	101	100	97	100	101	101	101	100	†	97	102	100	99	103	108	95	96	100
Non-malignant tumors, 56, 57	112	73	†	92	119	115	95	120	†	127	104	80	†	127	†	171	133	110
Diabetes, 61	86	95	100	95	84	86	85	87	†	78	88	86	80	89	67	100	87	100
Alcoholism, 77, 124a	50	46	†	50	54	52	52	52	...	43	60	50	†	47	†	†	45	†
Cardiovascular-renal diseases, 58, 83, 90–103, 130–132	104	104	113	102	104	103	101	106	83	110	102	106	100	102	99	105	102	99
Respiratory diseases, 33a, 104–114	113	119	102	126	110	115	116	114	116	106	120	107	126	115	92	112	120	114
Appendicitis, 121	87	†	...	†	87	87	89	84	96	92	78	87	93	88	†	90	79	92
Puerperal infection, 140, 142a, 145a, 147	74	†	†	†	73	74	...	74	...	74	...	...	...	†	†	†	†	...
Other puerperal causes, 141, 142b, 143, 144, 145b, 146, 148–150	99	†	†	†	94	96	...	96	...	96	...	...	...	†	†	†	†	†
Other diseases of the digestive system, 115–120, 122, 123, 124b, 125–129	106	111	107	112	106	106	110	102	129	105	107	102	102	120	114	106	131	117
Other diseases of the genito-urinary system, 133–139	101	126	100	131	98	101	102	96	†	84	100	106	109	106	110	100	114	†
Chronic poisoning and violent or accidental deaths, 78, 79, 163–198	8	†	...	†	0	8	†	†	...	...	†	†	†	...	...	...	...	...
Ill-defined and unknown, 199, 200	22	†	...	†	33	22	†	†	†	†	†	†	...	†	†	†	†	†
All others, 59, 60, 62–76, 80–82, 84–89, 151–162	101	103	111	106	100	101	100	102	98	129	118	89	100	104	106	94	112	100
Total Number of Decedents	7,330	1,678	329	1,349	5,606	6,955	3,617	3,338	1,163	1,123	2,612	1,378	679	1,707	204	362	845	296

* Coded according to the *Manual of the International List of Causes of Death* (Fifth Revision) and *Joint Causes of Death* (Fourth Edition), 1939. † Less than 10 cases.

as soon as the preliminary findings for these data were available, it was decided not to complete the abstraction of case histories in municipal hospitals. As a result, data for 1,678 deaths, or only one-fifth of the cases in municipal hospitals, were obtained for study. The great majority of these completed cases were Manhattan deaths which had been reported on the confidential certificate. The data from municipal hospitals, therefore, can be given little weight in this study. They are included in this report, however, since they appear to be consistent with the findings from proprietary hospitals.*

Of the 6,492 cases which were selected for study in proprietary hospitals, complete data were obtained for 5,652, the hospital charts could not be located for 715, and the charts for the remaining 125 could not be used because they contained insufficient information. According to their distribution by age, sex, color, and cause of death reported on the death certificate, the cases obtained for study from each borough and year comprise a representative sample of the cases originally selected.

MAJOR FINDINGS

The correlation between the primary causes of death as determined from diagnoses in hospital case histories and those determined from statements on death certificates for all 7,330 cases is shown in Table 1. These data indicate the causes to which deaths from selected conditions are generally attributed in New York City vital statistics. They also provide an approximate index of the extent to which these significant diseases are overstated or understated. These indices for the 17 cause-of-death groups are given in Table 2; column 1 is computed from the data in Table 1, and the other columns from similar tabulations which could not be included in the space allotted for this paper.

The great concentration of cases in the diagonal cells in Table 1 means that there is a very substantial agreement between the diagnoses in hospital case histories and the statements of cause of death on death certificates, and that, judged by these broad cause-of-death groups, disagreement is the exception rather than the rule.

Of the 17 cause-of-death groups studied, only the *respiratory diseases* (33a, 104–114) appear to be significantly overstated in official mortality statistics. They were charged with an excess of 13 per cent in this sample (Table 2). The overreporting of these diseases, primarily the pneumonias, was especially marked among white persons whose deaths were certified by internes in municipal hospitals.

As may be seen from Table 1, many deaths due to respiratory diseases are charged to the cardiovascular-renal diseases and an even greater number due to the latter are incorrectly attributed to the former. The difficulty appears to arise both because of disagreement as to whether the condition is lobar or bronchopneumonia and equally as often from carelessness in stating "lobar" when "lobular" is meant, or vice versa. Since cardiovascular-renal diseases are frequently associated with pneumonia, under the *Joint Cause Manual*, the *International List* assignments for the former conditions are also affected by the proper determining factor as to the form of pneumonia. For example, a cardiovascular-renal condition associated with pneumonia is assigned to the former if lobular, but to the latter if lobar.

In contrast, five conditions (alcoholism, syphilis, puerperal infection, diabetes, and appendicitis) appear to be understated on death records. These

* Contrary to expectation, the data from municipal hospitals reveal greater variations than those from proprietary hospitals. This may result from the fact that quite frequently in municipal hospitals several physicians may attend the same patient, and often the physician who certifies the death may not have been previously connected with the case.

TABLE 3

White Decedents with Alcoholism (77,124a)

Place of Death	Number from Case Histories (A)		Number from Death Certificates (B)		Per cent Ratio * B to A	
	1937–1938	1939, 1941	1937–1938	1939, 1941	1937–1938	1939, 1941
	Primary Cause of Death					
Proprietary Hospitals						
Manhattan	5	7	3	3	60	43
Other Boroughs	5	9	3	5	60	56
Municipal Hospitals						
Manhattan †	..	15	..	8	..	53
	Primary or Contributory Cause of Death					
Proprietary Hospitals						
Manhattan	17	10	8	7	47	70
Other Boroughs	17	17	11	6	65	35
Municipal Hospitals						
Manhattan	3	70	0	30	..	43
	Condition Existing at or Prior to Death					
Proprietary Hospitals						
Manhattan	19	12	8	7	42	58
Other Boroughs	19	17	11	6	58	35
Municipal Hospitals						
Manhattan	3	80	0	30	..	38

* These ratios are based on a small number of cases and may, therefore, be influenced by chance fluctuations.
† Excludes decedents under 15 years of age and those for which an autopsy was performed.

conditions will now be discussed.

Alcoholism (77,124a)—Of all conditions selected for study, alcoholism was most affected by differences between diagnoses in hospital case histories and causes of death stated on death certificates. Of the 54 deaths from alcoholism or alcoholic cirrhosis of the liver, only 23 (43 per cent) were so reported. Sixteen deaths were charged to other diseases of the digestive system, primarily cirrhosis of the liver without mention of alcoholism,* 7 to respiratory diseases, and the other 8 to various other causes. At the same time, 4 deaths supposedly due to other conditions were charged to alcoholism. In this sample, therefore, the official statistics accounted for only one-half of the mortality from alcoholism. This finding is in apparent agreement with the results of the confidential inquiry in Westchester County, New York, which revealed that approximately three-fifths of the deaths from alcoholism in 1931–1933 were correctly charged.[2]

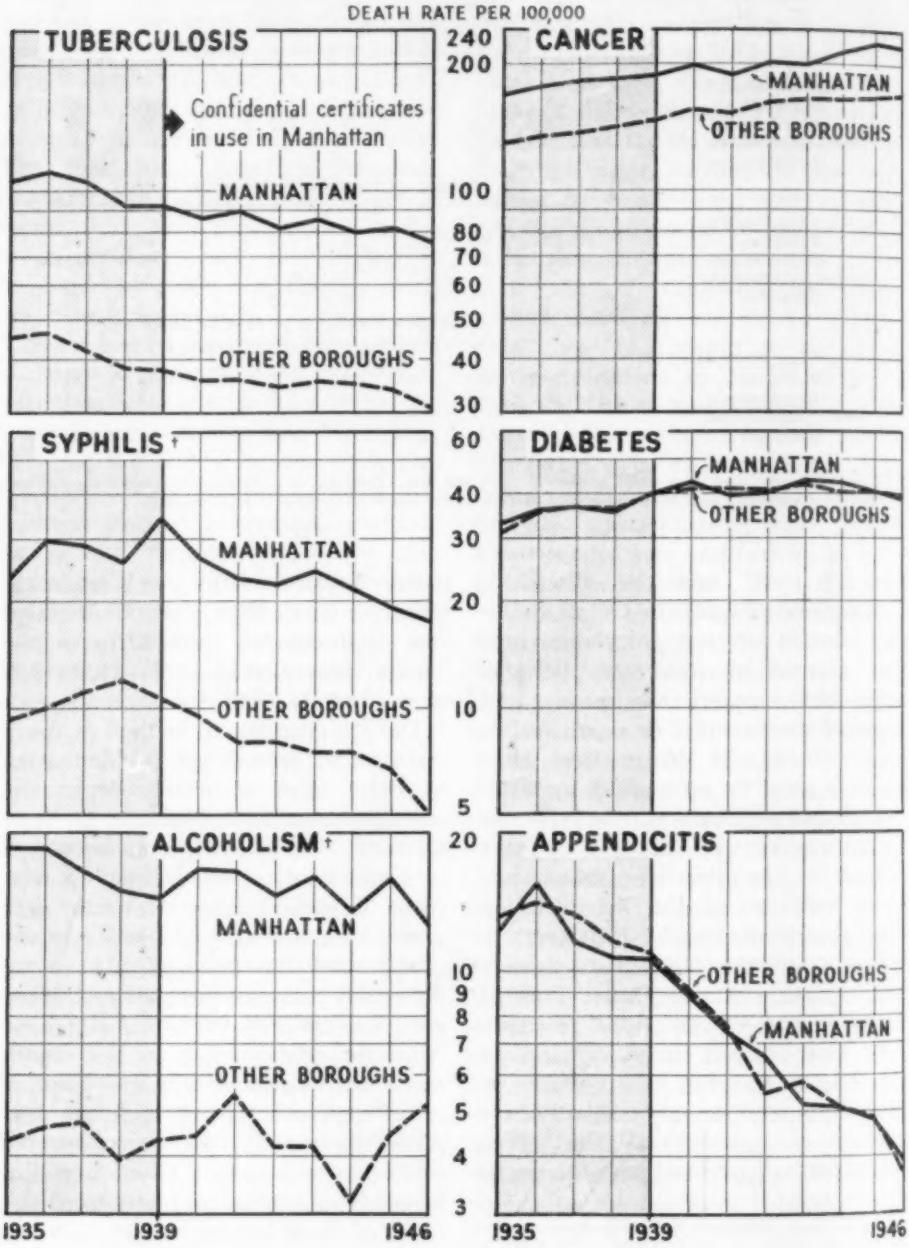
Did the confidential method of death certification, introduced in Manhattan in 1939, more accurately depict the mortality from alcoholism than the open method? The pertinent data are shown in Table 3. Since alcoholism is a relatively infrequent cause of death, only a small number of cases fell into the sample and the findings may be influenced by chance fluctuations. However, several facts are worthy of note. Approximately one-half of the deaths attributed to alcoholism were "improperly" reported from proprietary hospitals whether the open or confidential certificate was used. Even municipal hospitals in Manhattan understated this cause of death by one-half in 1939 and 1941. And, as may be seen from Table 2, this was also true for deaths certified by internes. Finally, it should be

* Today many physicians and pathologists question the role of alcohol in the causation of cirrhosis, as such. Thus, even though a patient with cirrhosis had a history of alcohol ingestion, they would prefer to place the etiology in the role of some dietary deficiency.

FIGURE 1

MORTALITY FROM SELECTED CAUSES

MANHATTAN COMPARED WITH OTHER BOROUGHS OF NEW YORK CITY*



* By residence; non-residents included in borough of death.

† To maintain comparability between the 1929 and 1938 revisions of the *International List*, deaths prior to 1940 are increased by 9.2 per cent for alcoholism and by 9.1 per cent for syphilis.

noted that, if alcoholism accounted for twice the number of deaths charged to it in official statistics, the recorded number of these deaths should increase significantly when the confidential certificate is used, if the method is more efficient than the open form of certification. Actually, as Figure 1 shows, the trend in Manhattan since 1938 has approximately paralleled the trend in the other boroughs.

Syphilis (30)—About the same extent of agreement between the hospital case history and the death certificate was found for syphilis as for alcoholism. Of the 141 deaths assigned to syphilis according to hospital records, only 66 (47 per cent) were so reported on death certificates. An additional 35 of these deaths were attributed to cardiovascular diseases, 13 to tuberculosis, and 27 to other causes (Table 1). In contrast, syphilis was selected as the primary cause of death from 11 certificates for which the hospital charts charged the deaths to other conditions. Failure to note on the death certificate that syphilis was successfully treated accounted for some of these differences. Thus, only 55 per cent of the mortality from syphilis was reflected by the official statistics (Table 2). For syphilis as for alcoholism, the data confirm findings previously reported for Westchester County where the figure for syphilis was found to be 51 per cent.[2] Similar to the findings from that study, syphilis was more accurately reported as the primary cause of death for men than for women; in this study the ratio was 0.58 among white males and only 0.40 among white females.

Syphilis appears to have been more completely reported from proprietary hospitals in Manhattan during 1939 and 1941 than during 1937–1938 (Table 4).

TABLE 4

White Decedents with Syphilis (30)

Place of Death	Number from Case Histories (A)		Number from Death Certificates (B)		Per cent Ratio * B to A	
	1937–1938	1939, 1941	1937–1938	1939, 1941	1937–1938	1939, 1941
	Primary Cause of Death					
Proprietary Hospitals						
Manhattan	8	12	4	8	50	67
Other Boroughs	7	8	2	6	29	75
Municipal Hospitals						
Manhattan †	3	33	1	21	33	64
	Primary or Contributory Cause of Death					
Proprietary Hospitals						
Manhattan	10	12	5	8	50	67
Other Boroughs	9	11	2	7	22	64
Municipal Hospitals						
Manhattan	6	59	2	33	33	56
Brooklyn	..	8	..	5	..	63
	Condition Existing at or Prior to Death					
Proprietary Hospitals						
Manhattan	10	12	5	8	50	67
Other Boroughs	11	11	2	7	18	64
Municipal Hospitals						
Manhattan	7	67	2	33	29	49
Brooklyn	..	9	..	5	..	56

* These ratios are based on a small number of cases and may, therefore, be influenced by chance fluctuations.
† Excludes decedents under 15 years of age and those for which an autopsy was performed.

It is doubtful whether we may attribute this improvement to the use of the confidential death certificate, since proprietary hospitals in the other boroughs of the city, which continued to use the open certificate, recorded an equal if not greater improvement. Moreover, the limited data for municipal hospitals closely approximate those for proprietary hospitals, though it should be noted that for each of these sources the recorded improvement may have been due to sampling fluctuations.

The fact that the confidential method has not proved more effective than the open appears to be confirmed by the trends in the official mortality statistics. If syphilis was completely reported, the level of the recorded death rate would be almost doubled. Even if it is assumed that only one-half of these deaths are affected by the form of certification, the rate should increase by almost 50 per cent. It is apparent from Figure 1 that the introduction of the confidential certificate in Manhattan in 1939 has had no such effect. The trend for Manhattan closely paralleled the trend for the balance of the city; it was upward until 1938–1939, and downward thereafter. Moreover, what at the time appeared to be a significant rise in the death rate in Manhattan from 1938 to 1939, now appears to have been a combination of a chance downward fluctuation in 1938 followed by one in the opposite direction in 1939. Finally, a special analysis of deaths which were reported from Manhattan in January, 1947, the ninth year in which the confidential certificate was used in that borough, reveals no evidence that the "closed" certificate has resulted in better statistics. Of 42 deaths charged to syphilis, 37 were reported from municipal or state hospitals, and 5 from voluntary or proprietary hospitals; none from persons who died "at home." Although it is possible that none of the deaths which occurred "at home" were due to syphilis, it is more likely that some did occur but were not reported.

How then may we account for the apparent improvement in the reporting of the mortality from syphilis and the upward trend in the death rate through 1938–1939? It seems fairly certain that these phenomena resulted from the intensive educational and clinical programs to bring syphilis under control which were launched by the Department of Health in 1935. Thus, in its annual report for 1937, it was stated that "the recorded death rate from syphilis is increasing due no doubt to more accurate reporting on death certificates." The effectiveness of the campaign probably resulted in a temporary increase in the recorded death rate, followed by a sharp decline after 1939. A similar trend was recorded in Philadelphia and in other communities following their inauguration of campaigns against the venereal diseases.

Puerperal Infection (140, 142a, 145a, 147)—Numerically, puerperal infection is only a minor factor in mortality. In recent years, fewer than 100 deaths have been annually attributed to this condition in New York City. However, it is probable that the disease is significantly understated in official mortality statistics since only three-fourths (74 per cent) of the deaths from puerperal infection were so charged for the cases in this study (Tables 1 and 2). Judged by the relatively small number of cases studied, the confidential method does not appear to be effective in improving the accuracy of these statistics (Table 5).

Diabetes Mellitus (61)—Diabetes is the only major cause of death found to be underreported on death certificates. Of the 394 deaths assigned to this condition, 318, or 81 per cent, were "properly" recorded. In 54 cases, death was attributed to cardiovascular-renal diseases, and 22 deaths were

TABLE 5

White Female Decedents with Puerperal Infection (140, 142a, 145a, 147)

Place of Death	Number from Case Histories(A)		Number from Death Certificates(B)		Per cent Ratio * B to A	
	1937–1938	1939, 1941	1937–1938	1939, 1941	1937–1938	1939, 1941
	Primary Cause of Death					
Proprietary Hospitals						
Manhattan	6	3	6	1	100	33
Other Boroughs	14	22	9	17	64	77
	Primary or Contributory Cause of Death					
Proprietary Hospitals						
Manhattan	7	6	7	5	100	83
Other Boroughs	14	22	9	17	64	77

* These ratios are based on a small number of cases and may, therefore, be influenced by chance fluctuations.

charged to various other conditions. In contrast, the deaths of 22 persons were allocated to diabetes in disagreement with the facts recorded in their hospital case histories (Table 1). For the cases included in this study, therefore, only 86 per cent of the mortality from diabetes was stated in the official statistics (Table 2).

In view of the fact that diabetes was less completely reported from proprietary than from municipal hospitals, and that deaths certified by attending physicians were least accurately recorded, one might expect an improvement with the use of the confidential certificate. No such evidence, however, is disclosed by the available data. As may be seen from Table 6, 78 per cent of the deaths due to diabetes in Manhattan proprie-

TABLE 6

White Decedents with Diabetes (61)

Place of Death	Number from Case Histories(A)		Number from Death Certificates(B)		Per cent Ratio B to A	
	1937–1938	1939, 1941	1937–1938	1939, 1941	1937–1938	1939, 1941
	Primary Cause of Death					
Proprietary Hospitals						
Manhattan	54	55	42	43	78	78
Other Boroughs	94	104	81	90	86	87
Municipal Hospitals						
Manhattan †	6	43	5	41	83 *	95
	Primary or Contributory Cause of Death					
Proprietary Hospitals						
Manhattan	76	74	51	53	67	72
Other Boroughs	122	133	102	114	84	86
Municipal Hospitals						
Manhattan	10	64	8	61	80 *	95
Brooklyn	..	19	..	17	..	89
	Condition Existing at or Prior to Death					
Proprietary Hospitals						
Manhattan	82	77	51	53	62	69
Other Boroughs	127	135	102	114	80	84
Municipal Hospitals						
Manhattan	10	64	8	61	80 *	95
Brooklyn	..	19	..	17	..	89

* These ratios are based on a small number of cases and may, therefore, be influenced by chance fluctuations.
† Excludes decedents under 15 years of age and those for which an autopsy was performed.

tary hospitals were properly charged in 1939 and 1941 when the closed certificate was used. This is the same extent of agreement between hospital case histories and death certificates as was found for 1937–1938 when the open certificate was used. The mortality statistics for New York City, which are shown graphically in Figure 1, confirm this finding. Moreover, judged by the data in the second and third tiers of Table 6, diabetes was not more frequently mentioned when the statement of cause of death was made confidentially, than when it was certified on the open certificate.

Appendicitis (121)—Official statistics apparently understate the true extent of the mortality from appendicitis. Of the 406 deaths from this condition, only 344 or 85 per cent were assigned to appendicitis on the basis of the cause-of-death statements on mortality records. An additional 44 deaths were charged to diseases of the gall bladder and other parts of the digestive system, 12 to non-malignant tumors, and 6 to various other conditions. At the same time, 10 deaths apparently due to other diseases were charged to appendicitis (Table 1). Thus, only 87 per cent of the mortality from appendicitis was recorded for this group of persons who died in municipal and proprietary hospitals (Table 2).

In planning the study, it was not expected that appendicitis would be found to be significantly understated on death records. As a result, the data were not tabulated in a manner which would permit one to ascertain whether this deficiency results from the omission of the condition from the death certificate or whether it is effected by the addition of other conditions which take precedence according to joint cause assignments. Judged by the data which are available for proprietary hospitals, appendicitis was more accurately charged as the primary cause of death in Manhattan during 1939 and 1941 than during 1937–1938 (Table 7). In contrast, proprietary hospitals in the other boroughs recorded appendicitis less accurately in 1939 and 1941 than in the preceding years.

It should be noted, when interpreting these data, that the changes for both Manhattan and the other boroughs are not greater than those which might occur due to sampling fluctuations. Therefore, since the trend in the recorded mortality from appendicitis for Manhattan closely paralleled that for the other boroughs of the city (Figure 1), it is improbable that the confidential method has affected the accuracy with which the condition is reported on death certificates. A probable factor is that the discrepancies arose primarily because of the lack of care with which the statements of cause of death were made on the certificates. The fact that deaths certified by internes were least accurately recorded (Table 2) appears to support this hypothesis. One should not overlook the possibility, however, that some physicians do not report appendicitis when it is the true cause of death, if its mention reflects unfavorably upon their professional ability.

TABLE 7

White Decedents with Appendicitis (121) as Primary Cause of Death

Place of Death	Number from Case Histories (A)		Number from Death Certificates (B)		Per cent Ratio B to A	
	1937–1938	1939, 1941	1937–1938	1939, 1941	1937–1938	1939, 1941
Proprietary Hospitals						
Manhattan	56	50	44	45	79	90
Other Boroughs	162	129	148	109	91	84

OTHER FINDINGS

Tuberculosis (13–22)—It does not appear probable from the data collected for this study that tuberculosis has been understated in the New York City mortality statistics for recent years. For every 100 deaths from tuberculosis according to hospital case histories, there were 101 assigned to the condition in the official death records (Tables 1 and 2). These findings are in apparent agreement with those obtained in the study in Williamson County, Tennessee.[16]

Although tuberculosis was not understated as the primary cause of death for the cases studied, its occurrence as a contributory cause was not completely recorded. This fact may be noted from a vertical comparison of the data in Table 8. For example, in Manhattan proprietary hospitals during 1937–1938, the extent of agreement was 100 per cent for tuberculosis as the primary cause of death, but only 90 per cent for the condition as the primary or contributory cause. Regardless of the criterion used, however, there are no indications that tuberculosis was more efficiently recorded on the confidential than on the open certificate. The mortality statistics for New York City confirm this fact (Figure 1).

Cancer (45–55)—Of the seven conditions considered likely to be affected by confidential certification, cancer is both the most important and apparently the most completely reported. A study of deaths which occurred in Massachusetts in 1932[17] revealed that approximately 6 per cent of the mortality from cancer was underreported on death certificates; 11 per cent of the cases were "missed" at the same time that 5 per cent were "overdiagnosed." More recently, from a survey of ten urban areas in 1937–1939, the U. S. Public Health Service reported that possibly only 5 per cent of the mortality from cancer was assigned to non-

TABLE 8

White Decedents with Tuberculosis (13–22)

Place of Death	Number from Case Histories (A)		Number from Death Certificates (B)		Per cent Ratio B to A	
	1937–1938	1939, 1941	1937–1938	1939, 1941	1937–1938	1939, 1941
	Primary Cause of Death					
Proprietary Hospitals						
Manhattan	28	11	28	12	100	109
Other Boroughs	23	16	21	20	91	125
Municipal Hospitals						
Manhattan †	6	55	5	57	83 *	104
	Primary or Contributory Cause of Death					
Proprietary Hospitals						
Manhattan	31	17	28	15	90	88
Other Boroughs	27	20	21	22	78	110
Municipal Hospitals						
Manhattan	14	99	7	86	50	87
Brooklyn	..	16	..	15	..	94
	Condition Existing at or Prior to Death					
Proprietary Hospitals						
Manhattan	34	17	28	15	82	88
Other Boroughs	32	22	21	22	66	100
Municipal Hospitals						
Manhattan	15	106	7	86	47	81
Brooklyn	..	17	..	15	..	88

* This ratio is based on a small number of cases and may, therefore, be influenced by chance fluctuations.
† Excludes decedents under 15 years of age and those for which an autopsy was performed.

malignant causes on death certificates.[18]

While the procedures followed are not similar, our data confirm these findings. Of 1,229 deaths from cancer, 1,176, or 96 per cent, were "properly" certified on death records. The other 53 deaths were charged to various other conditions (Table 1). Offsetting these "misses," 60 deaths were attributed to cancer on death records in disagreement with the facts available in hospital charts. For the cases included in this study, therefore, the official mortality statistics accurately reflected the extent of the mortality from cancer. This was true for deaths which occurred in proprietary hospitals as well as those reported from municipal hospitals (Table 2).

In view of the above, it is highly improbable that cancer is understated in the mortality statistics for New York City. It would not be expected, therefore, that the confidential method would have any effect on the accuracy of these statistics. This fact is confirmed by the data in Table 9, and the trends in the mortality from cancer shown in Figure 1.

Mental Disease—Because of the small number of cases, mental disease (84) as a primary cause of death is included with the "All Others" group in Tables 1 and 2. Analysis of the extent to which mental diseases (84, 162a, pt. 77b, 150b, 30b) are mentioned on death certificates, whether or not the conditions contributed to death, reveals no evidence that they were more completely recorded on the confidential than on the open certificate.

External Causes (78, 79, 163–198)—Among the 7,330 deaths studied, 17 cases were found in which an external cause appeared in the hospital case history but was not reported on the death certificate. Of these cases, 12 deaths should have been charged to the external cause, and 5 to other conditions. As may be seen from Table 1, one-half of the 12 deaths from external causes were charged to cardiovascular-renal diseases on death certificates, 2 to respiratory diseases, and 1 to each of four different conditions. Evaluation of these cases indicates that most if not all of these differences involve intentional avoidance of medical examiner action. As such, it is doubtful whether any form of reporting can be expected to eliminate these discrepancies.

Operations Performed—The completeness with which operations are reported on death certificates has a major effect on the accuracy of mortality statistics. It is pertinent, therefore, to ascertain whether operations were more completely reported on the confidential than on the open certificate.

Analysis of the data for 5,606 white decedents from proprietary hospitals reveals that operations had been performed on 2,147, or 38.3 per cent, of these patients. Of these, 2,097, or almost 98 per cent, were reported on official death records. While the fre-

TABLE 9

White Decedents with Cancer (45–55) as Primary Cause of Death

Place of Death	Number from Case Histories (A)		Number from Death Certificates (B)		Per cent Ratio B to A	
	1937–1938	1939, 1941	1937–1938	1939, 1941	1937–1938	1939, 1941
Proprietary Hospitals						
Manhattan	184	166	190	164	103	99
Other Boroughs	271	343	270	348	100	101
Municipal Hospitals						
Manhattan †	6	97	5	95	83 *	98

* This ratio is based on a small number of cases and may, therefore, be influenced by chance fluctuations
† Excludes decedents under 15 years of age and those for which an autopsy was performed.

quency of operations declined from 41.3 per cent in 1937 to 34.8 per cent in 1941, there was a slight improvement in reporting, from 96.6 per cent in 1937 to 98.2 per cent in 1941. This improvement, however, occurred in proprietary hospitals in boroughs other than Manhattan. Judged by proprietary hospital deaths, therefore, the confidential method did not result in more accurate reporting of operations.

DISCUSSION

When, about the year 1891, the confidential system of reporting was put into use in certain cantons of Switzerland, the number of reported deaths from syphilis was nearly doubled. Accordingly, the system was adopted and has been used throughout that country since January 1, 1901.[19] On the basis of this experience, it was expected that there would be a marked increase in the reported mortality from syphilis, as well as from several other diseases, following the introduction of the confidential system to New York City. In the first year of its trial in Manhattan, the confidential report apparently had increased the accuracy with which the mortality from syphilis was reported. Since that time, however, the parallel trends in the mortality from the disease, both in Manhattan and in the other boroughs of the city (Figure 1), have made it appear more probable that the rise, which was recorded in Manhattan from 1938 to 1939, was chiefly if not entirely a normal fluctuation.

The use of the confidential report was extended to the other four boroughs of the city on January 1, 1947. If the system proved effective, we should expect an increase in the mortality from alcoholism, syphilis, etc., in these boroughs, but not in Manhattan, where no change in method of reporting occurred. The recorded mortality data for the first 11 months of 1947 compared with the same period of 1946, for seven conditions considered significant to confidential certification, are shown in Table 10. There is no evidence from those data of any changes which may be attributed to the system of reporting. Therefore, it may be concluded that, to date, the confidential report has had no significant effect on the accuracy of mortality statistics in New York City.

No method of reporting, of itself, can be expected to eliminate all of the factors which affect the accuracy of mortality statistics. In 1938, Dr. Halbert L. Dunn stated that "the errors in cause of death due to carelessness on the part of the physician in filling out the

TABLE 10

Mortality from Seven Selected Conditions in New York City, by Borough of Residence (non-residents included in borough of death), First Eleven Months of 1947 and 1946 compared

Cause and International List Number	Number of Deaths				Death Rate *			
	Manhattan		All Other Boroughs		Manhattan		All Other Boroughs	
	1947	1946	1947	1946	1947	1946	1947	1946
Alcoholism (77)	109	137	64	132	6.2	7.8	1.2	2.4
Syphilis (30)	301	307	276	260	17.2	17.6	5.1	4.8
Puerperal infection (140,147)	22	19	33	36	56.4	59.5	25.1	31.6
Diabetes (61)	743	664	2,404	2,085	42.5	38.0	44.2	38.7
Tuberculosis (13–22)	1,268	1,320	1,572	1,665	72.6	75.6	28.9	30.9
Cancer (45–55)	4,007	3,851	9,364	9,036	229.3	220.6	172.3	167.7
Appendicitis (121)	66	71	196	209	3.8	4.1	3.6	3.9

* Deaths from puerperal infection per 100,000 total births; all other causes per 100,000 total estimated population, adjusted to annual basis.

death certificate are probably fully as numerous as those arising from his desire for a confidential record. . . ."[11] From this study, one might add that simple ignorance of the rules of certification and lack of understanding of the mechanisms of death also have a greater bearing on the information that is recorded than does the method of reporting. Moreover, there are no indications that better statistics have resulted from the use of the confidential method.

How then may we effectively and efficiently improve the accuracy of mortality statistics? This is a problem of major importance which confronts the consumer of vital statistics. Together with the instructor in the medical school, he must devise a means of impressing the attending physician with the importance of his responsibility in reporting causes of death. This should involve careful perusal of the patient's history chart to determine the factors which caused and contributed to death, and entry of the cause-of-death statement on the certificate with sufficient accuracy and care so as to reflect his conclusions.* Some improvement could also be effected by a change in policy, in local health departments, from paper check-up by death certification clerks to a consultative service which the physician could call *before* he certifies the cause of death. This would enable the physician, who has had few deaths in his own practice, to obtain the advice of one who has had practical experience with a great many cases as to the terminology and definition of causal mechanisms involved in a particular case.

The physician's unwillingness to record the causes of death to the best of his knowledge and belief is apparently of secondary importance to other factors which affect the accuracy of mortality statistics. Judged by the findings from this study, the confidential report does not improve the accuracy of diagnoses which reflect on the memory of the deceased. Apparently such improvement can be effected only through intensive educational campaigns which impress both the medical profession and the public with the fact that the development of medical knowledge, and the ability to combat disease, are dependent upon complete and accurate statistics. The campaigns against tuberculosis and cancer have removed many of the barriers of fear and superstition concerning these conditions and have thus been a factor in the present state of completeness with which they are recorded on death certificates. The current campaign against the venereal diseases has already effected a reduction in the inaccuracy of these mortality statistics. In the near future, as the campaign becomes more successful, the public will be completely impressed with the fact that the disease can be conquered. At that time, it may be expected that the true extent of the mortality from syphilis will be reflected by official statistics. Undoubtedly, most persons in this country prefer to face the facts openly and squarely, and will not intentionally withhold significant information once they are made cognizant of its value and importance.

SUMMARY

1. A confidential method of reporting causes of death, for deaths due to natural causes, has been used in the borough of Manhattan since

* The importance of the above cannot be overemphasized. In New York City, for example, more than one-half of the deaths are certified from institutions where more than one practitioner is in attendance. Frequently, these institutions find it necessary to execute a death certificate at a time when no physician who attended the patient is available. Even when one of the physicians is available, it is not possible for him to be able to fill out the death certificate without reference to the case history.

The situation is quite similar for an additional one-fifth of the deaths in New York City, which are certified by the medical examiner's office. In addition to the information obtained from the hospital or private physician, the completed history for these cases may contain extensive notes resulting from the examiner's investigation. All of this information must be carefully considered both from the medical examiner's and the vital statistician's point of view when the death certificate is prepared.

January 1, 1939, and in all five boroughs of New York City since January 1, 1947.

2. In 1943-1944, a study was made of 5,652 deaths which were certified from proprietary hospitals in 1937–1939 and 1941, and of 1,678 deaths which were certified from selected municipal hospitals in January and February of those years.

3. Judged by diagnoses abstracted from hospital case histories, five conditions were found to be understated on death certificates. The official statistics for these 7,330 persons accounted for only 50 per cent of the mortality from alcoholism, 55 per cent for syphilis, 74 per cent for puerperal infection, 86 per cent for diabetes, and 87 per cent for appendicitis. Tuberculosis and cancer were found not to be understated.

4. There are no indications from the data that better statistics have resulted from the use of the confidential death certificate.

5. The trends in the recorded mortality in Manhattan, while the confidential report was used, closely paralleled those for the boroughs which used the open certificate. Comparative mortality data for the first 11 months of 1946 and 1947 also reveal no changes which might be attributed to the use of the confidential report in all boroughs of the city since January 1, 1947.

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Selecting Public Health Personnel Through Examining Processes

Gleanings from the Conference of Health Officers and Merit System Supervisors *

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THIS conference, which consisted of an interchange of experiences in the use of various examining processes for the selection of public health personnel, was attended by health department and merit system representatives. Discussion, led by Dan S. Moore, State Director of Personnel, Louisiana Civil Service Commission, was informal, and focused for the most part on the three currently employed methods of selecting personnel under merit system regulations: the rating of training and experience, the written test, and the oral interview, with brief consideration of the weights given each in relation to the level of position under scrutiny.

While there were no formal recommendations arrived at during this conference—such was not its purpose—some of the comments and conclusions of the group are of such timely interest to administrators as to warrant recording.

THE ORAL INTERVIEW

There are two major purposes for which oral interviews are used: to sample the candidate's knowledge of the field, and to evaluate such factors as his personality, appearance, and ability to think and speak logically and clearly. It was suggested that a written examination properly constructed to test a candidate's knowledge, yields a far more precise measure than does the oral interview. The group agreed, however, that an oral interview to evaluate appearance and personality is especially important in selecting public health personnel because so many of the staff must meet and deal daily with the public. No administrator present was willing to appoint a public health physician, nurse, or engineer without a personal interview, and a board of oral interview serves as a preliminary screening of candidates for such interviews.

The objections to oral tests that were mentioned included: (1) a misconception, occasionally held by candidates, to the effect that interviews are "fixed" in advance; (2) the difficulty in scoring objectively and weighting appropriately the factors to be measured by the interview; (3) the frequent lack of a verbatim record of the interview which makes it difficult to prove the basis on which the individual interviewers made their judgments. Even with these drawbacks, however, the majority seemed to feel that the oral interview is a very necessary step in selection, and eliminates those obviously unsuited from a personality standpoint. No one would give it up.

THE RATING OF TRAINING AND EXPERIENCE

While no one present could offer a truly valid and workable method of eval-

* Presented at the Seventy-fifth Annual Meeting of the American Public Health Association in Atlantic City, N. J., October 6, 1947.

uating experience and training of professional public health personnel, all agreed that such rating is very essential. It was pointed out that its value, and therefore the weight assigned to this rating, increases with the importance of the position. For example: a public health nursing supervisor's training and experience bear a more direct relation to her potential ability to do the job well than the training and experience of a graduate nurse who will serve as an assistant to a public health nurse in a clinic. In fact, several health officers present thought that the rating of training and experience, plus the oral interview were the only tools needed or wanted in their states in selecting public health physicians.

THE WRITTEN EXAMINATION

The group devoted considerable time to discussing the pros and cons of requiring written examinations of professional personnel.

Those in favor of making the written examination an intrinsic part of the selective procedure offered in support of their opinion their belief that the written test presents:

1. Clearcut, indisputable evidence with regard to a candidate's knowledge of facts, and, if the right type of questions are used, provides an excellent measure of his capacity for exercising sound judgment.
2. The most reliable means we have to date for *ranking* candidates objectively. Several merit system supervisors and health officers remarked on the success with which the examinations prepared by the Merit System Service differentiated between the well prepared and less well prepared candidates in their states.

Many of those present indicated that they would like to use the objective type of written tests for all positions, but stressed their inability to persuade some of the professional groups to take examinations, because these groups:

1. Resent taking still another examination when they are already graduates of medical and nursing schools and licensed to practise.
2. Dislike—and this is easily understandable—finding that in spite of years of experience, they occasionally make scores lower than candidates with far less experience.
3. Feel that an objective test measures theoretical knowledge only.

It was also pointed out that one very bad factor in requiring a written test is the hardship worked on the candidate who is ill on the day of examination and who must then wait until another examination is held before being placed on the register.

A few persons present went so far as to say that professional people who have passed licensing examinations should be exempt from written tests and be judged on a rating of their training and experience, and by an oral interview. Merit system supervisors immediately pointed out that while this procedure may work when only 3 or 4 candidates are applying, a finer, more objective screening must be devised when 30 or 40 candidates are being ranked. With the best of efforts, the rating of training which has taken place in 30 or 40 different institutions all using different grading methods is difficult, while an evaluation of experiences which have occurred under as many as 100 employers each of whom offers a subjective opinion of the candidate's performance, leaves the scorer hopelessly at sea.

All were agreed, however, that reluctance to take written tests will probably be overcome when the candidates find the examinations are professionally acceptable and appropriate to the level of duties of the job. Such an examination can be compiled only if the specifications are good—that is, give complete descriptions of the requirements for, and of, the job. There is much room for improvement in many of the present job specifications.

WEIGHTING THE SELECTIVE PROCESSES

The discussion then turned to weighting the three selective processes: the oral interview, rating of training and expe-

rience, and written tests. The consensus seemed to be that the written tests for entering positions should receive very heavy weighting; that the oral interview should carry least weight of the three, perhaps 20–30 per cent; and that the rating of training and experience should carry a generous weight for "upper bracket" administrative positions, much less for first level jobs.

In conclusion, Mr. Moore summed up the situation by saying

> The establishment of a minimum qualification for admission to practise a profession, does not, in and of itself, eliminate from merit system selection those people who are not fitted to carry the specialized job. If some other device is not used, the appointing authority may find himself called on to choose the best of three undesirables. Written objective-type tests, properly constructed according to adequate job specifications, are suggested as appropriate and desirable instruments for ranking candidates.

He reminded the audience that the Merit System Service of the A.P.H.A. is interested in all steps in selecting personnel. It can suggest the names of persons to serve on oral interviewing boards, and as advisers for assisting with the rating of training and experience, as well as supply the written objective-type tests under discussion.

Beginnings of a Mental Health Program in a State and Local Department of Health*

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HEALTH officers in general recognize that a pressing need in their communities is the rapid development and expansion of mental health programs. Most feel that the community pressure is for the development of treatment clinics, and many people in health departments assume that that is the only kind of a program they can justifiably sponsor. Child guidance clinics and psychiatric clinics would probably be established by the thousands, almost overnight, if it were not for two very frustrating considerations, the lack of funds to operate a clinic and, even more serious, the inadequacy of well trained personnel. Many individuals, therefore, feel bewildered, and some discouraged when they find themselves blocked by these frustrations. In general, few people seem to see the work that is being done daily in the well baby, prenatal, tuberculosis, and venereal disease clinics, and in home visiting and family health counseling as being a very important opportunity for the promotion of mental health.

The reasons for such an attitude are perfectly justifiable. The usual well trained physician and nurse today do not think of themselves as capable of handling even simple emotional problems. Their professional education often did not give them this concept, and psychiatry itself has until very recently remained isolated from the rest of medicine. Consequently the general attitude in the majority of medical and nursing schools which seemed to be conveyed to the students, was that when there were problems of medical practice which related to feelings and attitudes, it was important to be aware of these, but, if possible, they should be left alone. This is one important reason why most doctors and nurses feel insecure when confronted with the emotions that accompany illness and convalescence. In many professional individuals there is also a lack of awareness of the importance of the emotional relationships that exist between doctor and nurse and patient, and their influence on both doctor and patient in everyday medical practice.

A growing number of people interested in mental health problems are coming to feel that a practical approach to the problem of meeting the mental health needs of communities could be made through professional workers already giving service to the communities. One of the most important of these groups is that of the health workers, who in company with school teachers, social workers, probation officers, and physicians in private practice, are concerned with helping people handle their problems and educating them toward

* Presented before the Maternal and Child Health Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 6, 1947.

the self-responsibility of keeping happy and well.

WHAT ARE THE PROBLEMS?

In coöperation with the Commonwealth Fund, the California State Department of Public Health undertook a project to ascertain what kind of program might be necessary to promote incorporation of mental health principles as part of public health practice. In late 1946, two physicians, with training in pediatrics and psychiatry and some experience in public health, joined the staff of the State Department of Public Health. These physicians were myself and Dr. Martha MacDonald. Dr. MacDonald worked with us for three months and then, unfortunately for us, resigned to do purely clinical psychiatric work. The first thing we did was to make a study of the State Department of Public Health and three local departments of health in the San Francisco Bay area. We needed to learn something about the following:

1. Attitudes of staffs about psychiatry and mental hygiene
2. How the staffs felt mental hygiene and psychiatry might help with their work
3. What did the staffs feel capable of doing
4. What did staff members lack which prevented them from becoming more effective in promoting the emotional well-being of their patients
5. How this could be supplied to them within the limitations of time for training and the tremendous work load which each department and staff member faced

A brief description of our findings and impressions pertinent to this discussion give some of the answers to the above questions. A large number of public health workers are eager for staff training in mental health concepts. However, any training program has to take into consideration the fact that because of the extremely heavy work load and the shortage of personnel, administrators are reluctant to give long periods of time to such training. At the same time, administrators feel the desire of their staffs for training in this field. They are beginning to understand that a high turnover of personnel is often the result of the blocking of professional individuals in their growth by overwork and the lack of opportunity for instruction. Highly trained personnel for education of local staffs cannot in general be attracted to local staffs because of the low salary scales. Local departments of health, therefore, are turning more and more to state departments of health for consultation, planning and financing of training programs.

Concepts about the training of local personnel are limited. Many health officers and nursing supervisors feel that a course of lectures on mental hygiene will meet the needs, and their thinking about education often stops here. Too infrequently do they see that a program needs to be planned so as to follow up in local public health practice what was covered in the lectures. One reason for this is that they feel that they need the mental hygiene expert to perform this task and rarely think of using people in their own communities who could supply another viewpoint and the discipline of another training such as school teachers, probation officers, social workers, etc.

In the majority of local health departments, where there are often only one or two full-time physicians, the backbone of clinical service is the public health nursing staff. The physicians who usually attend the clinics come for, perhaps, one afternoon a week and perform their duties and leave the health department alone the rest of the time. In the main, the physician performs the mechanical part of medical practice and when there is an important and emotionally-laden decision about the course of activities of an individual and his fam-

ily in relation to illness, this task is usually given to the nurse to handle. Even with the patient who has no major problem at the moment, it is the nurse in the clinic who often takes the history, explains the doctor's orders, or sees the patient functioning as part of the family. It should be no surprise, therefore, that the nurse is avidly seeking for information and guidance on normal emotional growth of individuals and their families. The nurses are the ones who have to support the insecure mother of the new baby, help the adult with tuberculosis to accept sanatorium care, get the patient with venereal disease to see responsibility in coming for treatment, etc. Yet the nurse is all the more insecure because her professional training and background have often been of an authoritarian nature, and she finds that this approach to the emotional problems such as she handles is rarely successful. Furthermore, as is also the case with physicians, she has often had no training whatever in the science and art of interviewing which both professions find again and again in their practice is the very thing they need most.

Another striking thing about many health departments is their utter lack of awareness of what other community agencies in their community are doing. Again, the person who interrelated these activities in the community was generally the public health nurse who, in her health work with families, needed to work with the social worker and the school teacher and sometimes the probation officer. However, the problem was mainly that the health department was so overwhelmed with work, as are the other community agencies, that its staff could rarely lift its eyes beyond its own confines and see itselves as an important element in a total community picture of community services. This increased, therefore, the frustration of many sincere and conscientious individuals who felt discouraged that there was so little they could do in meeting the emotional needs of their patients and families. This seemed to be because they thought in terms mostly of their own services, and, because of their lack of knowledge of the total community facilities, failed often to see the real importance of their own contribution to the patient.

Practically all the physicians who worked in the clinics felt a need for more knowledge of the normal individual, especially as to his growth and development, his reactions to illness, and his role in the doctor-patient relationship. Many physicians thought that this would help them in their practice as well as in their dealings with people everywhere. But also, it must be confessed, many physicians saw no particular reason for this since they were functioning quite successfully in their practices; and many felt that most simple emotional problems should be referred immediately to the psychiatrist.

Nurses stated they wanted more instruction about the normal emotions in children and adults and instruction on the techniques of interviewing. Occasionally an intuitive individual recognized that her own emotions and attitudes seemed to interfere or help in the treatment of some of her patients and would ask if some teaching could not be offered on this subject.

In summary it might be said that health workers are:

1. Eager for what psychiatry can offer them.
2. Belittle the potentially important mental health role they could play; feel they need the expert before anything can be done.
3. Feel inadequate in knowledge about the normal emotional behavior of children and adults. This is practically like saying that they want more confidence in knowing what human behavior really is.
4. Need more understanding of the emotional structure of the doctor-patient and nurse-patient relationship.
5. Want some instruction in interviewing and counseling.

Our study of the state health department's attitudes and needs led to much the same conclusions just presented. In addition, each bureau and division in the state department felt it would like to develop educational and training programs in relation to its own service programs. This was especially true of the Division of Preventive Medical Services which includes Maternal and Child Health, Public Health Nursing, Tuberculosis, Venereal Disease, Chronic Disease, and Industrial Disease services. The Bureau of Health Education wanted consultation from us as to literature, film, and library facilities, and the Division of Local Health Services wanted to have some consultation service available to local health departments for development of local mental health programs. The administrative personnel of the state department felt they needed a group of seminars to acquaint them with knowledge about normal emotional growth and development as applied to public health practice, some discussion on the problems of personnel, and the emotional aspects of administrative practices.

A PLAN FOR ACTION

These studies enabled us to draw up a plan of action which, it was hoped, would answer some of the needs as expressed and provide us with a means to test whether our ways of teaching and educating, once they were under way, were or were not meeting the needs and thus better equipping our health workers for helping their patients handle the emotional problems of living.

In the State Health Department the program is starting with a series of seminars for the top administrators. We meet informally once a week for a planned ten or twelve times. The groups are kept small—about eighteen to twenty members. The subject matter covers the following items:

1. The essentials of emotional maturity
2. The normal growth of the personality toward emotional maturity and the defenses which handle threats to the integrity of the personality
3. The emotions of illness and convalescence
4. The doctor-patient relationship
5. The nature of authority or emotional aspects of administration

Upon completion of these seminars, other series will be held with the various specialist and consultant personnel in the state department.

In two local health departments projects are under way which represent approaches toward aiding the nurses and physicians in the clinics to grow more quickly into the role of handling the emotional aspects of everyday medical and nursing practice. The Health Department of the City of Berkeley has added to its staff a pediatrician, with training in child psychiatry, who spends three half-days a week in health department work. In one of these periods this physician sees babies and mothers in a well baby clinic. The nurses of the health department rotate through this clinic every 3 months. Another half-day is given to educational programs for nurses and school counselors, and the third half-day is used for consultation with the pediatricians conducting other child health conferences. This program has been under way so recently that no evaluation of this approach is yet in order.

I also attached myself to a local health department, that of the City of Richmond. In coöperation with the health officer and his staff, a mental health teaching program has been started. We hope it will begin to meet not only the educational needs of the nurses and physicians but also become a part of the program of a busy, well rounded, overworked health department without adding to the burdens of a staff already pressed for time. Such a program should be possible within the usually limited budget of such a health department.

In this local health department I worked at first as pediatrician in a typical well baby clinic. Our plan was to have the nurses of the staff rotate through this clinic. In addition to observing, each nurse was to select two or three patients or families who represented a problem in management or were of especial interest to her. The nurse was to keep good notes on these patients, especially of the interviews. At the end of each clinic session these patients were discussed from the standpoint of emotional change in both patient and nurse, or what some psychiatrists and psychiatric social workers call "movement" in the emotional interrelationship as it developed and waned. The object here was to simulate an approach to the case work situation which the learning social worker goes through in her training. In this way it is felt that some attention can be given to the nurse and her feelings so that she begins to learn and accept certain approaches which she as a personality can use in dealing with patients which affect the patients either positively or negatively in relation to their medical care. This experience, going on concomitantly with the lecture material given during the weekly nurses' staff meetings, required the integration of much more of the material into the nurse's personality. Likewise it provided a method of controlled growth of the individual in understanding the emotions of others and also those of herself in relation to her patients. The practical difficulty with this scheme was that we could not reach all the nurses on the staff with such personalized teaching.

A new scheme is now being developed. The health officer and the supervisor of nurses arranged that I attend a special well baby clinic to which all the nurses could refer two or three families from her district. We could thus have at least two nurses attend with their families at each session, and in a matter of two to three weeks each nurse on the staff would have the opportunity to talk about how she felt about her patients and how she thought her patients felt about her.

I visit also the tuberculosis, crippled children screening clinic, rheumatic fever, and venereal disease clinics. This is more a consultation service discussing with the physicians and nurses those patients who refuse treatment, refuse hospital or sanatorium care, who become hostile in attitude, and those whose anxieties produce further symptoms and the like. Our policy here is to support and guide the nurse and the physician so that they handle these patient problems themselves rather than label the patient uncoöperative or refer him to the law officer or psychiatrist, if any is available.

Under the leadership of the health officer and the director of maternal and child health of the Richmond Health Department, the pediatricians in practice who attend the well baby clinics for the health department are considering meeting for a weekly luncheon at which the progress of our program will be followed and some discussions will be held on the mental health implications of office practice.

Along with this demonstration in a local health department it is contemplated that in coöperation with the Child Development Center of the Children's Hospital of the East Bay, the State Department of Public Health should also set up an experimental experience to see whether we can in another way supply some of the needs that nurses and physicians in public health, and medicine in general, do not get in their professional training. One of the great lacks for all physicians and nurses in their training has been an opportunity to understand and be with the normal child and get acquainted with the fact that he has emotions of hostility and anger which he must learn to in-

corporate in accordance with the pattern of our culture.

Another thing that medical workers are usually unprepared for is that parents sometimes have emotions of anger, guilt, or feelings of hostility against their children at the same time that they may have deep affection for their children. Our parents and children frequently seek for some help in understanding and accepting such feelings, and in this aspect of practice we most frequently fail to help them. To supply some of this need, which we think will also increase the health workers' understanding of emotions in adults as well as children, we are establishing what might be called a laboratory of human behavior for nurses and physicians. Here they will become a part of a nursery school staff, work closely with children, and examine their own emotional reactions to what they find in these children and parents. They will be guided in this by a staff or well trained nursery school teachers, pediatricians, and psychiatrists.

LEARNING FROM PATIENTS

Children are the best teachers in the world, if we observe and listen to them. They have constant frustrations leading to emotions of anger, sometimes hostility. They enjoy themselves simply and they normally initiate play which has much meaning for them. They form fast loyalties and are quick to detect the sensitivities and defenses in the makeup of adults. A few physicians and nurses will spend two to three months full-time, working with the nursery group under competent direction, and will be assigned one or two children whom they are to observe carefully, and try to put into writing what they observed. Under the guidance of a pediatrician, who is oriented in the emotional growth and development of children, the nurses and doctors will also spend time in the well baby, rheumatic fever, and cerebral palsy clinics, which are a part of the hospital and the child development center. Each nurse and physician will be assigned time, at least one hour a week, to discuss with a staff member his doubts, confusions, discoveries, and feelings about what is taking place. At the same time he listens in on the parents' class and the staff discussion about the child and his family situation.

At the end of this experience it is our hope that the nurse and physician will return to the health department not experts but a better nurse and a better physician. This should come about because they will better accept themselves as agents who help people understand their feelings and problems, rather than merely telling them how to be more adequate and healthy persons. If these physicians and nurses feel such an educational experience is what they need for their own growth in their work, then we plan to expand our efforts and invite medical and nursing staff members from local health departments throughout the state to apply for this experience. These individuals, returning to their departments after such an experience, will begin to influence other local staff members and also provide a nucleus of a local staff around which inservice training programs may be started. It is our intention, once this happens, to form a small state educational team which will work through and with these workers, thus giving continual educational stimulation in the incorporation of mental health principles as part of public health practice.

What I have described to you is a beginning of an approach toward this goal. We are feeling our way along. We hope this beginning will grow into a plan that may prove practical and effective enough so that other health departments may learn from our mistakes and our successes and thus adopt it to fit the conditions and needs found in their own staffs and in their own locale.

Volunteer Participation in Community Health in Hawaii*

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ANY health problem, no matter how complicated, can be handled effectively if it is broken down into its different aspects. These individual problems can then be dealt with independently; but an integrated overall plan is essential so that the various programs will strengthen each other and eventually lead to unified community action.

For the past two and one-half years we have been building an organization for this purpose in Honolulu. The program is still in its developmental stages but sufficient progress has been made to indicate that lay persons not only are interested but are eager to assume responsibility in health activities under professional direction. Volunteer workers are being utilized with good results. Our first step was to study and to evaluate existing health programs in terms of community needs. Then it was possible to work out policies and procedures on the basis of available data and the coöperative concern of community groups. The second step was to make the facts known and to keep them before the public through a sustained and constructive educational program that will bring about action in these matters. Both lay and professional groups have participated in all phases of the work. We are endeavoring to make community needs better understood; and to secure services more broadly conceived, adequately financed and administered.

The most difficult part of the demonstration has been the educational phase because it requires a sustained effort in which both lay and professional persons must participate if public interest is to be maintained. Furthermore, it necessitates a high quality of leadership, individual initiative, and a lot of time on the part of both groups.

The instrument which we are using to advantage to achieve our objective is a health council. Current membership in this activity includes 56 organizations, of which 35 per cent are civic organizations, 25 per cent professional groups, 22 per cent voluntary agencies, and 18 per cent official health agencies. The governing board consists of the council chairman, vice chairman, secretary, the chairmen of the three standing committees, two members elected by the council, and the two delegates representing the Public Health Committee of the Chamber of Commerce of Honolulu. Council expenditures are borne by the latter organization as a part of its contribution in the interests of promoting better community health. The professional personnel of the Public Health Committee function as the technical staff for the council. Planning and coordination are brought about through the program, education, and legislative committees, headed by lay and professional volunteers. Committee members are selected by each chairman, giv-

* Presented before the Public Health Education Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 10, 1947.

ing due consideration to all racial groups and organizations. Because these are working committees, emphasis is placed upon utilizing lay individuals as far as possible and making use of professional health personnel in a consultant capacity. Services of the latter are best used in planning because they usually do not have sufficient time to undertake the all-important follow-up activities. Besides, placing responsibility on lay volunteers gives them an incentive to demonstrate leadership and is a motivating force in overcoming public inertia.

Bi-monthly meetings, and special sessions as required, are held by the council. Programs are planned in coöperation with the various groups on the basis of interests and needs. This organization has provided a mechanism for discussing in a democratic manner health problems that have community concern. Also it has made possible the machinery with which to carry on follow-up activities of an educational and legislative nature which will enable us to deal more effectively with these problems.

A number of tangible results have already been achieved. They include establishing a full-time professorship in health education at the University of Hawaii, setting up a school of practical nursing under the auspices of the Vocational Division of the Territorial Department of Public Instruction, inaugurating outpatient clinic facilities in two local hospitals, sponsoring a Hawaii branch of the National Society for Crippled Children and Adults, and preparing an exhibit and booklet *The Health Story in Hawaii.*

Hawaii's health story merits special consideration because it is unique in our experience. Its purpose was twofold: to compile and present in a readable and interesting manner factual information on health in Hawaii; and to acquaint people throughout the Territory and on the mainland with health activities in the islands. The project was sponsored by the Public Health Committee of the Chamber of Commerce of Honolulu in coöperation with the Oahu Health Council. The former organization initiated the idea and subsidized the costs entailed in its preparation.

The chairman of the Community Education Committee of the Oahu Health Council headed the special exhibit committee. Other members included representatives of the Public Health Committee of the Chamber of Commerce of Honolulu and its staff, Territorial Medical Society, Territorial Board of Health, Hawaii Visitors' Bureau, and Holst and Cummings advertising agency. The first problem which confronted them was how to portray the desired overall picture of health work in the Territory. It was finally decided to prepare a small booklet of approximately one hundred pages with photographs and descriptive copy.* It was also agreed that the content should feature health programs rather than the specialized work of individual agencies because it seemed more logical to tell what is being done rather than who is doing it.

The first step was the preparation of an outline allocating a certain percentage of space to each activity. Then a script was written showing why the percentages were made and outlining the points to be covered in each picture and page of copy. This material was circulated to each health council member and to other interested persons throughout the Territory. A revised outline embracing the suggestions and criticisms received was then drawn up, and work schedules were made out for photography and final copy. Fourteen agencies and individuals contributed photographs; sixteen organizations provided consultant services and other materials.

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* *The Health Story in Hawaii,* Public Health Committee of the Chamber of Commerce of Honolulu, 1947.

The other phase of the project consisted of the preparation of a health exhibit which features fourteen photo murals mounted on a mechanical page turner. Hawaiian scenes form the background. The exhibit was prepared for display in the Scientific Exhibit Section of the 75th annual meeting of the American Public Health Association.

In the development of our program we have been motivated by the desire to obtain greater interest and more participation in community health work on the part of the general public. Satisfactory progress can be achieved only through dynamic leadership and the support and utilization of professional and lay volunteer personnel.

Cutter Recalls All Dextrose Solutions

Dr. R. K. Cutter, President of Cutter Laboratories, on May 6 telegraphed the following information for readers of the *Journal:*

"Contamination has been found in another and entirely different glucose solution, dextrose 10 per cent in Ringers. The company is coöperating with the Food and Drug Administration, and is requesting the assistance of health departments throughout the country, in immediately recalling from hospitals Cutter's entire line of dextrose and other solutions for mass intravenous injection. Company officials believe that discovery of this new contamination makes questionable the use of any product produced in their intravenous solutions department until this entire contamination difficulty is solved. The other products produced in this department are concentrated dextrose, distilled water, sodium citrate, normal saline solutions in 50 and 100 cc. bottles, as well as all flasks supplied by Cutter for community blood and plasma banks.

"The reason for this contamination is still unknown, and until they have the positive answer, Cutter feel that this is the only step that can be taken in the interest of public safety. In the meantime, arrangements are being made to supply hospitals with solutions of other manufacturers."

Simple Goiter in Colombia*

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SIMPLE goiter is a problem of Colombian pathology which is so prevalent and of such long existence that it has been treated by naturalists, physicians, and even writers and folklorists.

In 1808, Francisco José de Caldas, outstanding Colombian naturalist and martyr of our independence, mentioned repeatedly the problem of simple goiter in his scientific works. He apparently was the first man of learning who attributed the disease to drinking water which has an excessive quantity of lime and heavy minerals.

In 1810, Don Joaquín Camacho studied the distribution of simple goiter in Colombia. He noted the fact that in Bogotá the disease was frequent in the convents, where the source of the drinking water was a well or an artesian well—generally quite hard water. Moreover, though the efficacy of iodine had not as yet been discovered, Camacho found the lack of endemic goiter among the inhabitants of the seacoasts significant and attributed this fact to the use of sea salt.

Later in 1831, the French naturalist Boussingault observed the presence of simple goiter in human beings and animals in localities where cooking salt very low in iodine content was used. He, therefore, advised the Government of Colombia to establish the use of salt from natural iodized sources as a preventive measure against this endemic disease. So it was that, from 1831 until 1947—a lapse of 136 years—the country of Colombia has delayed in putting into practice the recommendation of this learned Frenchman.

A recent study carried out by Socarrás in 1942 on the registration of the recruits of the "Sanidad Militar" indicated that 10 per cent of the 153,000 prospective recruits were rejected from military service because of simple goiter.

On the basis of these antecedents, the Nutrition Department of the S.C.I.S.P. has carried out the following plan of study:

1. Incidence of simple goiter in Colombia
2. Distribution of the endemia
3. Propagation and extension of simple goiter
4. Causes, contributory factors, and the sequels of the disease
5. Preventive measures
6. Manufacture of artificially iodized salt
7. Financing of a project for the artificial iodization of salt and the creation and maintenance of the Instituto Nacional de Nutrición (National Nutrition Institute).

The following is a summary of these activities:

1. In order to determine the incidence of simple goiter in Colombia, the school age group was chosen among the various population classifications. The school group possesses three very necessary characteristics: first, it is representative of the general population; second, it is the most susceptible to preventive and curative treatments; and third, as a group for investigation purposes, its examination is easy and

* Presented before the Health Officers Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 10, 1947.

further observation and control are more certain. The school group, from 7 to 14 years of age inclusive, comprises 2,145,000 individuals, equally divided between the two sexes. As a group for investigation, it represents 21.4 per cent of the total Colombian population. Its distribution among the 14 departments of the Republic fluctuates between 22.1 per cent and 19.6 per cent according to information compiled by the Contraloría General de la República. From January, 1945, until July 31, 1947, there were examined a total of 140,163 school children throughout the 14 departments. The number of those children affected by simple goiter was 79,505 or an incidence of 56.5 per cent.*

The criteria for the diagnosis and classification of simple goiter in reference to form, size, and consistency, were established in a unified fashion from the initiation of the project. All examination of persons and the registration of the data were in charge of a special medical commission created for that purpose.

2. With the data obtained from the survey there was made a national map of the distribution of simple goiter by departments.

Mere observation of this map permits full appreciation of the high incidence of simple goiter (from 37 to 81 per cent) in the departments in the interior of the country. This is in marked contrast to the low incidence (less than 10 per cent) in the coastal areas along the Atlantic and Pacific.

The great difference between the two percentages is highly significant. It is apparently explained by the greater consumption of iodine by the inhabitants of the coastal regions. That iodine is obtained from the atmosphere itself and from foods of marine origin (including sea salt).

3. Based on the available historical data and the partial results of the survey on the incidence and distribution of simple goiter in Colombia, two very important premises may be established:

First, in some localities, formerly similarly affected by goiter, this endemia has been gradually disappearing, apparently as a result of better nutrition and the hygienic water supply for drinking purposes established for its inhabitants.

Second, for the last thirty years the endemia of simple goiter has been invading areas formerly untouched by it, such as—the Departments of Caldas and Antioquia. This has been due to the fact that the regional consumption of salt from iodized sources, has gradually been almost completely replaced by the use of salt from the large mines near Bogotá. The salt from these mines is extremely low in iodine content but it is cheaper, since it is exploited on a large scale and it is easily distributed to various centers of consumption due to the development of means of transportation throughout the country.

4. a. Simple goiter and drinking water—

The popular belief predominates in Colombia that the drinking of "hard water" is the cause of simple goiter.

In conjunction with the census of simple goiter, an attempt has been made to establish an association or correlation between these two phenomena; 209 water samples having been taken from 293 places included in the census.

The conclusions have been the following:

First, in places with "soft water" (up to 75 p.p.m.) and "semi-hard water" (up to 150 p.p.m.) the incidence of simple goiter fluctuates between 7 and 90 per cent.

Second, in localities where there is "hard water" or "very hard water" (more than 150 p.p.m.) the incidence

* These data include all the sizes of goiter (+ to ++++). If there are excluded the cases of (+), considered as transitory or "physiological," the incidence is reduced from 56.5 per cent to 35 per cent.

of simple goiter is always high, i.e., more than 45 per cent.

b. Simple goiter and climate—

There exists no correlation between these two phenomena. Simple goiter is distributed in an equal manner between the various climatic areas. (Cold climate—more than 6,000 feet above the sea level in altitude; temperate—between 2,500 and 6,000 feet above the sea level; and hot climate—less than 2,500 feet.) There is, however, a higher frequency in climates where anquilostomiasis or hookworm predominates.

c. Simple goiter and cretinism—

In some regions of Colombia, where simple goiter endemia is of long duration, there may be noted defects in physical development (stature shorter than that of the average) and abnormalities in mental development on a scale varying from the mentally retarded and "slow" to the cretin and the idiot.

5. Prophylactic Measures—The historical antecedents of the simple goiter endemia in Colombia, the determining factors in its invasion and extension into some regions, the significant difference between the incidence of the endemia in the interior and the coastal regions of the country—all lead one to consider the relative scarcity of iodine as the principal etiological factor in the incidence of simple goiter in Colombia. This, of course, does not exclude the effects of other contributory elements.

On the basis of this etiological premise, the Department of Nutrition proceeded to search for an adequate manner of furnishing a supplementary source of iodine—as a prophylactic measure against simple goiter. It was proposed to incorporate this supplementary iodine into ordinary kitchen salt for use by the inhabitants of the interior of the country.

As the first step in this procedure, the average daily consumption of salt per capita was determined. This is 15 gm. Then, the optimum iodine content of the salt was calculated to be 4 mg. per 100 gm.

Samples of the salt, with a natural iodine content, from the old mines were analyzed but though the original iodine content was acceptable, the production capacity for the desired consumption was inadequate.

Samples were also analyzed for iodine content of the marine salt and the salt from the mines near Bogotá. The iodine content was almost equal.

It was then planned to iodize and stabilize the marine salt, but the project was abandoned because of technical difficulties and administrative problems (collapse of the production of the mines, social problems with labor, cost of transportation, etc.).

6. Artificial iodization of salt—

It was finally decided to iodize artificially and stabilize the salt from the mines of Zipaquirá, Nemocón and Sesquilé, situated almost in the geographical center of Colombia.

The manufacture of salt in powdered form from these mines follows a process which consists essentially of the following: (1) extract the mineral from the mines, (2) dissolve it in sweet water, (3) let it be purified and concentrated in a solution called "salmuera" up to 28–30 per cent salt, (4) evaporate the salt solution in containers of iron at a temperature of 98–100° C., (5) separate into precipitated salt, (6) permit to dry and transport for wholesale distribution in burlap sacks (retail sales per pound in paper sacks or wrapped in vegetable leaves).

At the present time there is manufactured and consumed a quantity of 100,000 tons of land salt per annum, destined for human use and for that of animals.

The method of artificial iodization tried out and adopted consists in adding to the salt solution—before it is placed in the iron caldrons—the mixture of

iodine and chemical stabilizing substances. This method does not require special machinery, obtains a uniform distribution of iodine throughout the salt, and results in being both simple in procedure and economic in cost. The stability of the iodine in the iodized salt is checked by samples submitted to various temperature and humidity conditions in cold, temperate, and hot climates, and in containers of ordinary paper. The loss of iodine content fluctuates between 3 and 4.5 per cent of the original content, after from 8 to 14 months subsequent to the time of the manufacture of the salt.

There is already information to determine the most adequate composition of the iodine mixture necessary in order to obtain a stabilized artificially iodized salt which is both cheap and easy to prepare.

7. Financing—Once the experimental studies were terminated, the Nutrition Division of the S.C.I.S.P. submitted for the approval of the Minister of Health in June, 1947, a project designed for two specific purposes: first, the artificial iodization of the salt from all the mines, and second, simultaneously with the first objective, to provide for the creation and the maintenance of the National Nutrition Institute for the study of the food and nutritional problems in Colombia.

The project for the financing of the proposed program consists essentially in the following phases: (1) the increase by 1 cent (Colombian) of the selling price of iodized salt over that of the common salt (this increase produces approximately Ps. 2,000,000 each year), (2) from this annual income, to pay the iodization expenses and to assign the total funds in excess of that cost for the creation and maintenance of the aforementioned Institute.

The original project of the Division of Nutrition was approved by the Minister of Hygiene and presented by him to the Consejo de Ministros (meeting of national cabinet members) which entity also gave its approval. At the present time the proposal is under discussion by the National Congress, which body must pass it as a Law of the Republic. In the event that the proposal becomes law, the Division of Nutrition will have achieved two fundamental objectives: the prevention of simple goiter and the financing of a vast plan for the benefit of Colombian Nutrition. All this is being accomplished without burdening the budget of the Minister of Health nor that of the Servicio Cooperativo Interamericano de Salud Pública and at the cost of only 12 cents (Colombian) per annum to each inhabitant of the interior areas of Colombia. This accomplishment will be doubtless one of the most effective contributions of the Servicio Cooperativo Interamericano de Salud Pública in Colombia.

NOTE: The work and projects on simple goiter have had the approval and the unqualified support of the Directors of the S.C.I.S.P. in Colombia and of the Ministers of Hygiene throughout the entire period of the campaign. The Banco de la República—the entity in charge of the income proceeding from the exploitation of the salt mines throughout Colombia, has given every facility for the experiments on artificial iodization of salt on an industrial scale. In these studies and experiments, Dr. D. M. Hegsted of the Nutrition Division of the Schools of Medicine and Public Health of Harvard University—Asesor Técnico of Nutrition under contract to the Ministry of Health, Dr. Jacinto Caycedo—Medical Director of the Simple Goiter Commission in Colombia, and Dr. Alfonso Parra—Chemist of the Nutrition Laboratory—have given valuable assistance.

SUMMARY

1. Simple goiter is an ancient and serious problem of pathology in Colombia.

2. Surveys carried out on 140,000 school children, from 7 to 14 years of age inclusive, show an incidence of 56.5 per cent, including all sizes of goiter (+ to ++++). If there are excluded those cases of (+) value, the incidence is reduced to 35 per cent.

3. The history of simple goiter in Colombia, the process of its propagation to certain re-

gions of the country previously immune, and the marked difference of the incidence of the endemia between the school children of the interior (more than 50 per cent) and those of the maritime or coastal regions (less than 10 per cent) lead to the conclusion that the relative scarcity of iodine is the principal etiological factor of simple goiter, without excluding other factors such as anquilostomiasis (hookworm) and the quality of the drinking water.

4. In those regions of the Country where simple goiter is of long duration as an endemia (more than 100 years) there are observed cases, in children and in adults, with chronic defects in physical development (stature shorter than that of the average) and with evidences of mental retardment (mentally "dull" and cretins).

5. As a preventive measure against simple goiter in behalf of the entire population of Colombia there is proposed the artificial iodization of the salt from the land mines, in the proportion of 4 mg. of iodine per each 100 gm. of salt. The average daily intake of salt per capita is 15 gm.

6. In order to finance the artificial iodization of the salt there is proposed an increase of one or two cents in the selling price per pound of salt. This increase will produce an annual fund of from 2 to 4 million pesos (approximately 1 to 2 million U. S. dollars).

7. From this annual income will be paid the iodization expenses and the remainder of the money will be destined to the creation and maintenance of the Instituto Nacional de Nutrición (National Nutrition Institute).

8. The project for the artificial iodization of salt and the creation and maintenance of the National Nutrition Institute is at the present time under discussion by the National Congress of Colombia and has already received the approval of the Special Commission of the Senate.

9. The approval and realization of this project will be one of the most efficacious contributions of the Servicio Cooperativo Interamericano de Salud Pública in the benefit of the Colombian people.

Budgets and Expenditures for Dentistry from Maternal and Child Health Funds*

A study of the dental programs of selected states, 1938–1946

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CONTINUOUS planning of programs is one of the essential elements of public administration. To plan effectively it is essential to review and appraise the nature and extent of past activities in a particular field. One of the continuing jobs of an administrator, therefore, is to "pull out the files" and to inform himself of the experience of others.

For the most part the development of dental programs in state health departments followed the passage of the Social Security Act in 1935 when grants in aid became available to the states to extend and improve health services to mothers and children. The Children's Bureau, in administering Title V, Part I, of the Social Security Act, makes grants-in-aid to states on the basis of an annual plan and budget which is submitted by each state for maternal and child health services. The Children's Bureau further requires that each state at the end of the fiscal year submit for audit a report of the expenditure of these funds.

An examination of these records for dental items helps us in appraising what has developed, and should establish bench marks for the continued planning of public dental programs.

Such a study is now under way in the Children's Bureau, and this paper is in the nature of a preliminary report, covering the budgets and expenditures of eight selected states for a period of 9 fiscal years from 1938 through 1946. The material presented is limited to the items concerning dentistry which appeared in the budgets and audited expenditures of the states. Only those items were recorded that could be clearly identified as dental expenditures. Lump sum reporting of supplies, equipment, or educational materials may have included items for the dental programs, but it was not possible to extract such amounts. It should be pointed out also that the amounts reported to the Children's Bureau by the states cover only federal funds and the money used by the states for matching these funds. The reported amounts, therefore, do not necessarily represent the entire sum spent by the various states for dental services. It should be emphasized that findings in the study are preliminary and subject to review in the light of future analysis.

For purposes of administration, the Children's Bureau has established 8 regional offices. One state from each of these regional jurisdictions was selected for this preliminary report on the basis

* Presented before the Dental Health Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 2, 1947.

that the dental program of the state health department had been maintained continuously for the 9 years under study. No other criteria were applied in the selection of the states. Thus it cannot be assumed that these states constitute a representative example from a national or regional point of view. These findings are, however, descriptive of continuing programs in the states concerned.

While it is beyond the scope of this paper to discuss administrative or program content, it is interesting that 7 of the 8 states have always employed full-time dental directors. Four of the 7 have served for the entire 9 years. The 1 part-time director has also headed up his state's dental program since its inception. In 2 cases, the directorship has changed and in 1 of the states the dental program operated for 2 years without a dentist in charge.

It is interesting further that by 1942 all of these states had brought their dental personnel under state merit system classification plans.

Almost one and three-fourths million dollars were earmarked for dental programs by these state health departments, three-fourths of which were subsequently expended. The amounts budgeted range from $68,000 to $427,000 per state, with half the states budgeting in the neighborhood of $150,000. The proportion of these budgets which was actually spent ranges from 55 to 93 per cent with half of the states well above 80 per cent and 1 other state closely approaching that figure.

The related weight of dental expenditures to the total sums spent for maternal and child health services varied from over 11 per cent in 1939 to 6.5 per cent in 1945, rising again to 10 per cent in 1946. In this computation the expenditures for this group of 8 states are combined for each of the study years. The percentage remains fairly constant for the first 3 years and then tends to decrease through 1945, but rises sharply back to its former level in 1946. Trend for individual states was varied. In 1 of the states the trend was consistently downward through the entire 9 year period. In another of the states no trend was evident, while in the other 6 states there was a great amount of fluctuation during the 1940's. As the United States was engaged in war during 4 of these years, it is possible that these fluctuations were caused by man power shortages and scarcity of materials and supplies. At this point, however, such considerations are matters of conjecture. Detailed study of this trend was not possible with the present material and will be reserved for a later, more detailed analysis.

Concerning expenditures for dentistry in 1938 and 1946, the first and last years studied and also the proportion of the total maternal and child health expenditures used for dentistry in those years, our study shows that 6 of the 8 states increased the amount of their dental expenditures substantially. In the states where there was an increase in the amount of dental expenditures in 1946 as compared with 1938, the increase ranged from $3,510 for state No. 2 to $40,390 in state No. 1. In the case of state No. 7 the funds decreased by approximately $5,000, and in state No. 8 the decrease amounted to nearly $25,000.

A breakdown of the dental expenditures over the 9 year period according to object (salaries, travel, supplies, fees, training, and health education) shows that the bulk of the total dental expenditures was involved in salary items in all the states, with the exception of state No. 4, the overall proportion of the total for this item being 71 per cent. Items for travel demanded the next largest outlay (11.4), with fees (9.8), supplies (5.9), training (1.1), and health education (0.7 per cent).

The salary items cover a variety of personnel, in the main full-time em-

ployees. Part-time dentists on a salary basis were listed by 4 of the states, one of them as previously stated being a director of his state's dental program. A summary of the latest classification plans of the states illustrates the types of personnel which made up the bulk of these salary items. Although the titles vary somewhat in the different states, in general, the personnel fall into 6 classes:

Director of Dental Health
Senior Public Health Dentist
Junior Public Health Dentist
Senior Dental Hygienist
Junior Dental Hygienist
Clerks and Stenographers

Travel items were listed for all types of professional personnel and included out-of-state trips.

Supplies covered a wide range of equipment such as dental instruments, chairs, engines, cabinets, laboratory equipment and instruments, dental supplies, automobile and trailers, as well as general office materials.

As pointed out earlier, sometimes supplies were lumped together as one item in the reports of expenditures. It is possible, therefore, that the total given here may not represent the entire expenditures for such materials.

Fees included payments to practising dentists for correctional dentistry in clinics or private offices, and for inspection, diagnostic and preventive services.

It is interesting to note that state No. 4 reported a much higher total of expenditures for these fee items than for salaries. Expenditures for fees in this state made up 56 per cent of the total dental expenditures. Fees represented 13 per cent and 9 per cent of total dental expenditures in 2 other states. In the remaining states the payment of fees to practising dentists for clinical service constituted a very small proportion of the dental expenditures in these state programs.

Training embraced both graduate education for full-time personnel and refresher courses for practising dentists. The former included stipends and tuition. The latter type of training included both lecturers and clinicians who visited local groups of dentists, and the sending of local dentists to dental schools for short refresher courses.

Health education items were expended for publications, printing of leaflets, exhibits, visual education materials and equipment, and for the organization and conduct of institutes for teachers and lay people. Here too, these materials may have been grouped in general supply item reports which would not show.

Material has been presented for 8 selected states on the budgets and expenditures of dental programs in state health departments. Recognizing the limitations created by the small number of the states included, and the incompleteness of some of the items, the study nevertheless illustrates a useful approach to the problem of studying growth and change in the size of dental programs. The procedure outlined also delineates the relative importance of different types of expenditures under dental programs.

Mass Control of Dental Caries Through the Use of Domestic Water Supplies Containing Fluorine

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BASED upon the generally prevailing rate of decay and tooth loss the forecast for the future is grim to the point of seriousness. A prediction published by an authoritative source as recently as June, 1947,[1] puts it as follows:

"It is estimated that . . . the 3,400,000 children born in 1946 . . . at 16 years of age will (each) require 7 fillings and 2 extractions and that 40 per cent of those reaching 40 years of age will require dentures."

Evidence collected during the past several years has established that the continuous use of a domestic water supply containing even as low as approximately 1 p.p.m. of fluoride, during the period of tooth calcification, will bring about a mass reduction in the dental decay rate. As will be apparent later in this paper the conditions existing in fluorinated districts are in complete disrelation with the prediction quoted just above.

The evidence up to the present time has been derived almost wholly from examinations of children. There has been almost no information as to the dental

TABLE 1

Summary of observations on 400 Colorado Springs (Colo.) natives having dental fluorosis

Age Groups	*10–14*	*15–19*	*20–24*	*25–29*	*30–34*	*35–39*	*40–44*	*45 and above*
Number of persons examined	65	89	70	66	35	26	26	23
Number of persons showing no dental caries experience	42	44	23	14	8	4	1	4
Number of teeth showing untreated dental caries or fillings	71	135	166	259	136	97	192	136
Number of teeth lost because of dental caries *	4	5	6	..	..	..	..	..
Number of teeth lost (all causes)	4	5	10	12	19	12	16	22
Number of decayed or filled teeth per person	1.09	1.51	2.37	3.91	3.88	3.73	7.38	5.91

* In the higher age groups it is not possible to determine accurately whether teeth were lost by caries or by other causes.

Total number of persons	400	Average decayed and filled teeth per person	2.98
Number of persons showing no decay experience	140	Total number of teeth lost (all causes)	100
Per cent of persons showing no decay experience	35	Total number of incisor and cuspid teeth showing decay experience	45
Total number of teeth showing decay experience	1,192		

Comparison of Tooth Loss at Colorado Springs with "Standardized Rate"

"Standardized Rate" * tooth loss per person	..	1.2	2.3	3.8	5.8	7.9	10.2	..
Tooth loss (all causes) per person, Colorado Spgs.	0.06	0.05	0.14	0.18	0.54	0.46	0.61	0.95

* From, Klein, H. *J.A.D.A.* 30:80–96 (Jan.), 1943 (table 4); data represent 45,500 white U. S. Adults, all socio-economic groups.

condition of adults who had acquired fluorosis of the teeth during childhood.

The data in the tables which follow were collected in the City of Colorado Springs, Colo., during the past three years, and are intended in part to supply this important information.

The observations summarized in Table 1 are not from a selected group of people but were made from persons as they presented themselves from day to day. All are natives of continuous residence with continuous use of the city water supply which has fairly consistently maintained a level of 2.6 p.p.m. of fluoride, since the first determinations were made several years ago.

The purpose of this paper is to show the actual condition that exists in this community after about 70 years of use of this water supply.

This is set forth in Table 1.

In addition to showing the average decay experience rate (untreated and filled teeth) in the different age groups, the table shows that this rate for the entire group is 2.98 per person. It will be noted also that slightly more than one-third (35 per cent) of these persons had experienced no decay whatever. The average age of the group is about 25 years. The age groups 10–14 and 15–19 show the remarkably low decay experience rates of 1.09 and 1.51 respectively, the decayed areas being practically limited to the fissures and pits in the molar teeth. The low incidence of caries experience in fluorosed upper anterior teeth cited by Dean [2] is confirmed by the present study, in which it was found that of the 1,192 teeth showing caries experience only 45 were in the incisor and cuspid group.

From the above it is apparent that decay of the proximal surfaces of fluorosed incisors and cuspids is almost negligible. The "standardized rate" of tooth loss as it appears in Table 1, has been accepted as a measure of the prevailing tooth loss from all causes. Table 1 shows a slowly increasing average decay experience rate as the ages advance, for which no explanation is suggested, but it is important to note that at the highest average rate shown (the 40–44 year group) the rate is considerably less than the *tooth loss* rate in the "standardized rate" table. The significance of these rates of decay experience and tooth loss can be best comprehended by comparison with a non-fluoride community such as the City of Madison, Wis. * This comparison is shown in Table 2 which was compiled by Dr. John G. Frisch of Madison.

The observations summarized in Table 3 were made in Colorado Springs and Montrose, Colo.,[3] the persons examined having acquired fluorosis of the teeth in other widely scattered communities and districts through the use of domestic waters containing fluoride. These districts were generally in the middle and southwestern states and in other parts of Colorado.

Tables 1 and 3 bear a close similarity. Perhaps the most important comment pertaining to Table 3 is that the inhibitory effect of fluorine, once acquired, is permanent and is not diminished by later migrations. It is not necessary that the use of fluorinated water be continued. It is indicated also that the average rates of decay experience and tooth loss shown in Colorado Springs are by no means peculiar to that city alone. Examinations made in other communities using fluorinated water supplies, in various parts of the country, have shown that the average decay rate remains consistently at about 3 and that about one-third of the native persons are caries-free.[4]

It seems, therefore, that a pattern has been established which indicates what may be expected in any community that uses a fluorinated water supply. Bearing

* Madison is one of the cities that have recently undertaken a project for fluorination of its water supply.

TABLE 2

Comparative LOSS OF TEETH AND DENTAL DECAY EXPERIENCE by Age Groups

MADISON 0.05 FLUORINE P.P.M. — COLORADO SPRINGS 2.6 FLUORINE P.P.M.

		Number Examined	Number No Decay	Number With Decayed and Filled Teeth	Decayed and Filled Teeth	Extracted Teeth	Average No. Decayed and Filled Teeth per Person	Average No. Extracted Teeth per Person
AGES 10-14	MADISON	840	33	5538	376	7.04		0.448
	COLORADO SPRINGS	60	40	66	4	1.10		0.067
	6 TIMES AS MUCH DECAY EXPERIENCED PER PERSON 7 TIMES AS MANY EXTRACTED TEETH PER PERSON							
AGES 15-19	MADISON	224	4	2446	323	12.36		1.442
	COLORADO SPRINGS	167	78	277	11	1.72		0.065
	7 TIMES AS MUCH DECAY EXPERIENCED PER PERSON 22 TIMES AS MANY EXTRACTED TEETH PER PERSON							
AGES 20-24	MADISON	158	0	2182	509	17.03		3.222
	COLORADO SPRINGS	101	33	254	9	2.60		0.089
	7 TIMES AS MUCH DECAY EXPERIENCED PER PERSON 36 TIMES AS MANY EXTRACTED TEETH PER PERSON							
AGES 25-29	MADISON	106	0	1336	569	17.97		5.367
	COLORADO SPRINGS	93	18	331	23	3.80		0.246
	5 TIMES AS MUCH DECAY EXPERIENCED PER PERSON 22 TIMES AS MANY EXTRACTED TEETH PER PERSON							
AGES 30-34	MADISON	82	0	1174	477	20.13		5.817 *
	COLORADO SPRINGS	46	10	159	18	3.84		0.391
	5 TIMES AS MUCH DECAY EXPERIENCED PER PERSON 15 TIMES AS MANY EXTRACTED TEETH PER PERSON							
AGES 35-39	MADISON	85	0	1135	5.77	2014		6.788 *
	COLORADO SPRINGS	37	6	119	11	3.51		0.298
	6 TIMES AS MUCH DECAY EXPERIENCED PER PERSON 23 TIMES AS MANY EXTRACTED TEETH PER PERSON							
AGES 40 and ABOVE	MADISON	251	0	2310	2976	21.06		11.857 *
	COLORADO SPRINGS	64	6	379	24	6.29		0.375
	3 TIMES AS MUCH DECAY EXPERIENCED PER PERSON 32 TIMES AS MANY EXTRACTED TEETH PER PERSON							

* All causes

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COLORADO SPRINGS, COLO.

July, 1947

Table 2 was computed from charts compiled prior to those used as Tables 1 and 3 in this paper which accounts for the slight variations.

TABLE 3

(Observed in Colorado Springs and Montrose, Colo.)

Summary of observations on 218 migratory persons having dental fluorosis

Age Groups	*10–14*	*15–19*	*20–24*	*25–29*	*30–34*	*35–39*	*40–44*	*45 and above*
Number of persons examined	51	80	32	20	13	8	7	7
Number of persons showing no dental caries experience	25	35	8	5	3	1	0	1
Number of teeth showing dental caries or fillings	76	155	93	66	43	28	36	33
Number of teeth lost because of dental caries *	8	7	3	1	0	..	..	..
Number of teeth lost (all causes)	8	7	3	8	0	4	4	4
Number of decayed or filled teeth per person	1.49	1.93	2.90	3.30	3.30	3.50	5.14	4.71

* In the older groups it is not possible to determine accurately whether teeth were lost by caries or by other causes.

Total number of persons	218	Average decayed and filled teeth per person	2.43
Number of persons showing no decay experience	78	Total number of teeth lost (all causes)	38
Per cent of persons showing no decay experience	35.7	Total number of incisor and cuspid teeth showing decay experience	16
Total number of teeth showing decay experience	530		

Comparison of Tooth Loss in this Migratory Group with "Standardized Rate"

"Standardized Rate" * tooth loss per person	..	1.2	2.3	3.8	5.8	7.9	10.2	..
Tooth loss (all causes) per person in this migratory group	0.15	0.08	0.09	0.40	0.0	0.5	0.5	0.5

* From, Klein, H. *J.A.D.A.* 30:80–96 (Jan.), 1943 (table 4); data represent 45,500 white U. S. Adults, all socio-economic groups.

on the relation between the degree of fluorosis of the teeth and the caries experience rate, a significant observation made on the Colorado Springs group was that in 137 of the first 300 persons examined the degree of fluorosis was classified as "mild." Their average caries experience rate was 2.46 and 55 (40 per cent) of this group were caries-free.

It has not been maintained that any benefit will accrue to teeth formed prior to the use of fluorinated water, and yet it cannot be said that this will not be the case. Reliable evidence bearing upon this point would be difficult to obtain, but there is a feeling that such teeth may experience some benefit.

Primarily this is a long-range influence directed toward the reduction of tooth decay in children and at the same time endowing the teeth with a resistance against decay that extends, as the tables show, well into adult life.

The chief research project in dentistry has been and still is to determine the cause of decay and to devise means for its elimination. No caries reduction program encountered thus far has succeeded in delivering any considerable segment of a mass population into adult life with an average caries experience rate of about 3 and a complete absence of decay in approximately one-third of a native population, as has the use of a domestic water supply in which fluorine is a natural constituent. Some twenty-five communities in this country have accepted the evidence as sufficiently conclusive to warrant the addition of fluoride in a proper proportion to their domestic water supplies as a means of reducing the decay rate. If in the future some method of further reducing the decay rate should be available, it need not necessarily be in conflict with the action exerted by fluorine.

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NOTE: Grateful acknowledgement is made to Mark F. Bryant, D.D.S., of Colorado Springs for his assistance in collecting data.

Sixth Annual Meeting United States-Mexico Border Public Health Association

The Sixth Annual Meeting of the United States-Mexico Border Public Health Association was held in Laredo, Tex., and Nuevo Laredo, Mexico, March 20–22. Nearly 300 persons were in attendance with almost as many from the South of the Border as from the North.

Sessions were held on international coöperation in health, on Border sanitation, on tuberculosis and its control, with special reference to BCG, on meningitis and other communicable diseases, and on the problems confronting the mother and child. Excellent exhibits were shown from the Section on Public Health Education of the Ministry of Health and Welfare of Mexico. Coöperating agencies beside the Ministry of Health were the U. S. Public Health Service, the Ministry of Hydraulics in Mexico, the Ministry of Agriculture in Mexico, the Institute of Inter-American Affairs, the U. S. Children's Bureau, the International Boundary and Water Commission, the Rockefeller Foundation, the University of Vera Cruz, the Texas Tuberculosis Association, the Crippled Children's Foundation, and the Pan American Sanitary Bureau.

It was decided to hold the meeting in 1949 at Nogales, Ariz., and Nogales Sonora, Mexico.

The new officers for the Border Public Health Asocciation were elected as follows.

President: Dr. Victor Ocampo Alonzo, Hermosillo, Sonora

President-Elect: Dr. George W. Cox, Austin, Tex.

Vice-Presidents: Dr. Jose Angulo Araico, Mexicali, Baja, Calif.; Dr. J. P. Ward, Phoenix, Ariz.

Secretary: Dr. M. F. Haralson, El Paso, Tex.

Pro-Secretary: Dr. Gustavo A. Rovirosa, El Paso, Tex.

Role of the State Health Department in the School Dental Program*

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STATE departments of health are accepting six responsibilities[1] in the conduct of school dental programs. Briefly, these responsibilities are:

1. Studying and planning for the solution of dental health problems
2. Coördinating and advising local agencies
3. Subsidizing local programs
4. Establishing standards for dental programs
5. Disseminating authentic dental health information
6. Coöperating with other state agencies

While the listed functions indicate that state departments of health are exhibiting characteristics of leadership, the actual performance in conducting school dental programs does and should rest with local personnel.[2] The state department of health within this concept functions as an interagency. How indispensable local participation is for meeting dental health needs will be discussed under each of the listed functions.

1. *Studying and planning for the solution of dental health problems*—A local board of education or a local board of health conducts surveys to determine the prevalence of dental defects among school children. It is desirable that local personnel be aware of the dental needs of their children. However, the value of the findings will be enhanced if local authorities are able to compare conditions found in their community with conditions found in other situations.[3] By utilizing comparable data obtained under similar or nearly similar conditions, the effectiveness of program technics can be evaluated. Not only can results of programs be reliably measured, but also costs can be accurately estimated by uniform reports.[4]

State departments of health should designate inspection charts and recommend techniques for dental surveys, so that uniform procedures may be utilized throughout the state. After dental conditions found in local areas are carefully analyzed, the state department will be able to make recomendations for dental programs, not by theoretical armchair thinking but by accurate estimates.

A number of state departments of health are conducting demonstration and research projects. Among the phases being studied are the fluorination of communal water supplies, the topical application of 2 per cent sodium fluoride, incremental dental care procedures for children, dental care time estimates, and evaluation of health education devices.

2. *Coördinating and advising local agencies*—When local dental programs are supported by health, welfare, and educational agencies, maximum results may be expected; but competent leadership is required to develop such coördination. When requested to do so, a state dental administrator usually finds it less difficult to accomplish rapport of local personnel than does a home-town

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official. Moreover, because of his objective viewpoint, a state administrator is better able to recommend desirable changes or improvements.

In New Jersey the dental health division of the State Department of Health has found it profitable to help organize dental health committees representing local schools, health departments, nurses, dental hygienists, parents and teachers, and other groups interested in child health. In some instances, these dental committees operate solely to promote the dental program; in other places, they operate as subcommittees of health councils or committees.[5]

3. *Subsidizing local programs*—Many rural and suburban communities have neither facilities nor funds to maintain effective dental programs. Particularly is this true of dental treatment programs. State departments, being the agents for distributing federal and state health funds, are able to subsidize dental care programs in the sparsely populated areas.

However, contributing money does not warrant the establishment of authoritarian policies by a state department. Such details as designating children entitled to treatment, scheduling treatment hours, appointing dentists, might well be the responsibilities of local agencies. Also, local personnel might profitably be permitted to decide whether clinics, private offices, or mobile clinics are to be utilized. Moreover, the local dental society should be invited to recommend policies for the program.

Subsidies provided by state departments of health may take several forms. The state may pay all or part of the salaries of dentists; dental equipment and supplies may be provided. In rural areas, many state departments are providing trailers, automobile clinics, station wagons, or portable dental equipment.

Some communities will find it necessary to have the state dental administrator help in supervising dentists participating in the local dental program. When requested, and only when requested, such supervision should be provided because competent professional supervision of a dental care program will improve standards of treatment.

4. *Establishing standards for dental programs*—Under the heading "Subsidizing Local Programs," the need of assigning responsibilities to local agencies was stressed. However, local school administrators should seek the advice of state dental directors before instituting dental programs. Most state dental directors are following the recommendations of the U. S. Public Health Service, the Children's Bureau, the Council on Dental Health of the American Dental Association, the American Association of Public Health Dentists, and the National Committee on School Health Policies. The following are a few of the basic policies recommended:

a. Simplified and uniform examination procedures should be used.[6]

b. Record forms approved by the American Association of Public Health Dentists should be utilized.[7]

c. Dental treatment programs should begin with younger children with subsequent incremental care provided.[8]

d. Topical applications of 2 per cent sodium fluoride should be provided four times a year for children.[9]

e. All necessary fillings and extractions should be provided for children included in the community treatment programs.[10]

f. Authentic dental health information should be used as content material in the health education programs.

g. Desirable motivating devices should be used in the health education programs.

If the state department of health is to fulfil this role of establishing standards for dental programs, recommendations should be presented in printed or mimeographed leaflets.[11] To obtain uniform data, the state department should print forms and charts in large numbers so that they can be either distributed free to local agencies or sold at cost.

5. *Disseminating authentic dental health information*—Physical education personnel and classroom teachers require guidance in selecting dental health education material. The dental bureau of the state department of health should be prepared to offer this guidance by means of field visits or by printed or mimeographed material. Informative leaflets, source units, and manuals, have been printed by state departments of health. Also, nearly all state departments purchase material published by the American Dental Association for distribution among local personnel.

State departments of health should organize state and local committees to prepare dental health education material.[12, 13] This collaboration is highly recommended because it results in broader concepts and avoids the disadvantages of specialized thinking. State departments of education, state departments of health, state dental societies, state departments of welfare, state agricultural colleges, state teachers colleges, dental schools, state nursing organizations, state organizations for physical education, may collaborate in preparing authentic dental health education material.

The distribution of visual aids, such as movies, slides, posters, models, and charts, has been found worth while, particularly if directions for their proper use accompany the material. Health educators have informed us that visual aids as well as printed materials are to be used only as tools; that the chief objective of health education is not mere information but desirable changes of dental health practices.

6. *Coöperating with other state agencies*—Equally as important as coördination of local agencies in the conduct of local dental programs is the collaboration of all state health, welfare, and educational agencies for dental objectives. In most states we find a number of state agencies, both official and nonofficial, involved in local school health programs. Since their policies are usually set by their state administrators or state officers, it is imperative that the state dental bureau work closely with these state organizations. In the case of welfare agencies and such nonofficial groups as a state congress of parents and teachers, procedures in the local areas are directed by the state leaders. After the state dental director has cleared with the state office, it is much easier to function with the local representatives of these state groups.

SUMMARY

It has been shown that the state department of health may operate as an interagency encouraging effective dental health programs in local communities. If it accepts this responsibility by employing democratic techniques, maximum results will be obtained by providing expert guidance on the state level and encouraging active participation in the local communities.

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Senate Bill Provides Aid to Medical Education

Early in May, Senator Elbert D. Thomas of Utah introduced a bill providing for federal subsidies to schools of medicine, dentistry, nursing, and public health, and for scholarships for qualified students. The bill has been referred to the Senate Committee on Labor and Public Welfare and is numbered S. 2588.

According to the *Washington Report on the Medical Sciences,* federal grants up to $20,000,000 a year are authorized for medical schools; $8,000,000 for dental schools; $18,000,000 for nursing schools, and $2,000,000 for postgraduate schools of public health. In addition, federal grants up to 50 per cent of the cost of new construction of physical facilities are authorized. To qualify for grants, schools must not impose unreasonable restrictions against admission of nonresidents or bar applicants on the basis of race, creed, color, or national origin (special provision is made for institutions in those states having racial segregation laws). State and national scholarships are provided for, the former in medicine, dentistry, nursing, and public health, and the latter in medicine alone. Holders of national medical scholarships would be pledged to serve one year in federal status for each two academic years of his scholarship. Or he would be permitted, in lieu of government obligated service, to practise in an area where a state health authority considered there to be a shortage of physicians. State scholarships include tuition and books. The other type offers, in addition, a stipend of $90 per month. Final paragraph of S. 2588 prohibits any federal agency or officer to "exercise any control over, or prescribe any requirements with respect to, the curriculum or administration of any school, or the admission of applicants thereto."

Health Problems Resulting from Newer Technological Developments*

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THE health problems associated with the newer technology have been most prominent ever since the news of the atom bomb was released. Other wartime and post-war developments have contributed to our peacetime health hazards. Before discussing some of these, I wish to emphasize two related facts.

The first is that not all of the old problems of industrial medicine have been solved. On the contrary, new ones have arisen in the use of materials that well qualified observers had previously assumed were well controlled. For example, an innocuous substance such as talc, or at any rate one formerly believed to be innocuous, is now being investigated as a cause of pulmonary disability. Likewise, workers who have been employed in atmospheres well under the maximum allowable concentration of silica appear in some cases to be developing silicosis. Thus, as there is an advancing front of medical problems arising from the contact with newer products, a struggle in the rear areas with the old compounds continues.

The second point is that much of the newer information is still not generally available because of security restrictions. This includes important medical and industrial observations on microwaves, biological warfare, and radioactive materials.

The advance in industry has developed along several pathways. I will discuss only the five most prominent: radioactive materials, newer chemicals —both in substance and application— newer metals, microwaves, and ultrasonic waves.

Radioactive materials have been rightly considered by the lay and the professional public to be the key to the technology of the future. We are limiting ourselves in this discussion to health problems, and so the many actual and potential benefits which radioactive isotopes afford to medicine and industry will not be dwelt upon.

To evaluate the health hazards associated with this field, let us see what the exposure is, how widespread it will be, and what ill effects have been reported to date.

Radioactive materials emit a variety of radiations but they all exert effects that are roughly similar. The deleterious effect on human beings is produced by setting up destructive ionizing reactions in the tissue. The response varies with the type and amount of exposure. Damage to the germinal cells, the bone marrow, and the lymphatic tissue, and the occurrence of malignant changes comprise the conditions to be expected and guarded against. Experimentally, these results are easily demonstrated. Exposure to sufficient gamma radiation or the introduction of an alpha emitter in a sufficient quantity (and remember even a fantastically small amount may be a sufficient quantity) has produced sterility.

* Presented before the Industrial Hygiene Section of the American Public Health Association at the Seventy-fifth Annual Meeting in Atlantic City, N. J., October 7, 1947.

Leukemia has resulted from bombardment from a neutron source, and a variety of malignancies have been produced by exposure to fission products. The work of Brues, Lisco, and Finkel,[1] as reported at the 1946 Gibson Island Research Conference on Cancer, is interesting in this connection. Using strontium (Sr^{89}), bone tumors and lymphoma were produced; ytterium 91 (Y^{91}) caused intestinal lesions with obstruction, and plutonium (Pu^{239}) caused splenic atrophy and gross liver damage. After the subcutaneous injection of one gamma of Pu^{239} localized fibrosarcomas appeared within one year, and localized ulcerative lesions and spontaneous amputations occurred.

Obviously, radioactive substances are inherently hazardous, but can they be handled and used safely? The answer is uncompromisingly yes. Before developing this statement, let us consider how widespread is their use.

On August 2, 1946, the first shipment of radioactive isotopes produced in the chain reacting pile at the Clinton Laboratories at Oak Ridge, Tenn., was made to the Barnard Free Skin and Cancer Hospital in St. Louis. During the following year over 1,000 shipments were made throughout the continental United States and the Territory of Hawaii. These shipments approximated 1,500,000 miles, and were sent to about 150 scientific and research institutions. These isotopes are being used in fundamental research, in medical research and treatment, in cancer study and treatment, in biological research, and in industrial research. Radioactive isotopes are used in oil well logging, in metallurgy, in aircraft engine development, and in structural analysis of heavy objects, such as castings and girders. In agriculture, tracer elements are used to study soil chemistry, plant hormones, photosynthesis, and the entomological aspect of farming.

To date no ill effects, apart from accidental exposure, have been reported as a result of the industrial or scientific use of radioactive isotopes. The reason for this is simple. It gives us no grounds for complacency but rather is an indication of what control measures must be exercised in the future. Effects from chronic radiation have not occurred because careful attention to details of protection has made the production, transportation, and use of these isotopes safe. For example, at Clinton Laboratories the budget of the health physics group amounts to more than $250,000 annually. Their job is monitoring and supervising the radioactive material from the time it enters the pile until final disposal occurs. Shipping containers vary from less than a pound to a ton, averaging 150 lbs. In one case a 23 gm. unit (approximately the weight of a half dollar) containing radioactive cobalt (CO^{60}) was shipped in a container weighing 1,600 lbs. Other meticulous details are carried out, such as checking the radiation of truck wheels before trucks leave the laboratory to avoid radiation damage to the driver in the event of changing a tire.

It has been shown that radioactive materials can be manufactured, transported, and used safely. Maximum allowable concentrations have been established for all types of radiation. The methods of detection and the means of protection from radiation are so adequate and well tested that only the careless, the uninformed, or the foolhardy should suffer exposure. This is borne out by the record of the Manhattan District plants and the Atomic Energy Commission installations, as well as by the absence of injury to the 70,000 people taking part in the Bikini experiments.

For the future I see three health problems in this field. The first is accidents and their prevention. When working with fissionable products there can be spills, breaks, and other unfore-

seen occurrences that will produce radiation sufficient to cause serious injury or death. This has occurred and, no doubt, will continue, but the incidence has been and should be very low. The second is unfamiliarity or insufficient knowledge of how to handle these materials. As the number of institutions using these products swells from 150 to the thousands, there will be workers who will not abide by the tolerances and safety rules laid down. Then too, more detail work will be performed by individuals lacking the physicist's viewpoint.

The following example is typical of what might be expected: In a southern hospital a medical technician was carrying out analytical procedures with a radioactive substance (which parenthetically was not received from the Atomic Energy Commission) in a manner which was subjecting her to total radiation of many times tolerance. Her superior had failed to assure himself that everyone in the laboratory knew and practised the essentials of protection. As the actual work stems down farther and farther from the individual to whom the material is sent, this hazard grows. One need only couple the deformities and skin cancers of our early radiologists with the fact that present radiologists have a leukemia rate eight times that of males of a comparable age, to understand that progress in protection for scientific workers comes slowly. We then receive a view of what may be in store for workers in the future unless adequate supervision is maintained.

The third problem is that of chronic low level exposure. Most investigators and workers will be using negligible amounts of radioactivity in tracer experiments, and only simple precautions will be needed. However, when we calculate the sum total of all the radioactive isotopes used over the entire country, and as some (carbon 14 for example) have a half life of over 5,000 years, the serious character of the disposal problem becomes evident. Simply diluting the material and letting it pass into our streams and rivers will not suffice. The radiation would continue and be built up with successive disposals. This problem is being investigated by everyone concerned, but the final answer has not been found.

The industrial chemical field is broadening too rapidly and too extensively for me to do more than select one company as an example of the methods of handling the problems associated with new products. In 1946 this company developed over 50 new products, and it is expected that in 1947 at least as many more will be produced.

The problem for a manufacturing concern is to make certain that no product is used in a manner in which systemic toxicity or skin irritation might result to its workers or consumers. It is impossible to obtain toxicological information on 50 or so compounds in a year, but those compounds that have an application where ingestion or skin contact is a factor must be examined.

For example, every new textile chemical, such as the melamine resins, is subjected to a laboratory study for systemic and skin reaction, culminating in patch testing on 200 human subjects. With plastics and plasticizers, animal experimentation, involving in some cases two year feeding tests, must be made before they can be marketed. Some substances, such as polystyrene and some plasticizers, are so innocuous that they can be used in any application, while the use of others must be more limited.

Certain new chemicals used as biocides, such as hexaethyl tetraphosphate or sodium fluoracetate, possess a high level of toxicity, and investigations must be carried out on their pharmacological activity to allow them to be used safely.

Simply stated, the problem for the

chemical industry is to decide which products must be examined, as the toxicological facilities available today do not allow universal examination. The workers, especially those engaged in research and pilot plant activity, must be subjected to stringent industrial hygiene and medical control as this class of employee is exposed to products about which usually little is known.

In discussing the toxicology of the newer metals it is, perhaps, more accurate to use Fairhall's description and refer to them as metals which have become important industrially in recent years.[2] The most prominent members of this group are beryllium, cadmium, tellurium, uranium, and vanadium. There is no common group action or symptom complex. Very little is known about some of these substances, because as yet they have been used in limited amounts in restricted work or have not been recognized as having distinctive physiological properties.

Beryllium has been reported as the causative agent of two types of lung condition. One is a chemical pneumonitis which occurred in men working with fluorescent powders. Some of the beryllium salts, notably the sulfate, hydrolize easily and extensively so that the local production of sulfuric acid in the lung could be expected after the inhalation of the dust.

Reports of a number of cases of what is termed pulmonary sarcoidosis have been appearing in the literature in the past few years. These workers were exposed to beryllium powder in the fluorescent lamp industry. The causative relationship has not been worked out and extensive laboratory investigations on this point are under way.

Cadmium has been responsible for a considerable number of fatalities due at first to a non-recognition of its physiological action but later due to a non-recognition of its presence on the parent metal. Cadmium coatings of vessels can cause poisoning when they are used as food containers. If a cadmium-coated article is subjected to a cutting or welding torch, cadmium oxide fume poisoning may result. This takes the characteristic form of a delayed pulmonary edema similar to nitrous fume poisoning.

Cobalt is used chiefly in the production of magnets in conjunction with nickel and aluminum and as a bonding agent in metal carbide tips for the tool and die industry. Considerable physiological and pharmacological work has been performed showing that cobalt administration produces polycythemia. There have been no reports of clinical or industrial poisoning, however.

Tellurium is a metal that was found to improve the hardness and machineability of steel. Cases of tellurium poisoning have been reported due to excessive fumes. The symptoms are anorexia, lassitude, nausea, and vomiting. The main diagnostic feature is a garlicky odor of the breath and urine. These cases have not proved particularly serious.

Uranium is a poisonous element and causes kidney damage similar to other heavy metals, such as mercury. Chronic nephritis, as a result of exposure to this metal, occurred as early as 1854. There have been no reports published of any ill effects in workers engaged in purifying this material for use in the chain reacting piles.

Vanadium is a metal that has markedly increased in use as a catalyst and a component of steels. There is considerable discussion about the degree of toxicity it possesses. Pulmonary edema and pneumonitis have resulted from inhalation in animals. In workers the lung changes have been limited to an asthmatic bronchitis.

High frequency radiations, popularly called microwaves, include that range of the radio frequency spectrum from approximately 1,000 megacycles (1,000,000,000 cycles per second) to 30,000

megacycles per second or higher. Their wave length varies from 30 cm. to 1 cm. These radiations had been generated prior to 1939 but their wartime use in radar vastly stimulated their use and development. These high frequency radiations are the basis of the electronic field and have wide industrial application. It is important that their effect on the workers be determined.

Microwaves have optical properties. They can be focused and may be selectively absorbed by various media such as water, oxygen, and, presumably, tissue. Up to now the only biological effect noted has been the production of heat similar to medical diathermy. There has been no ill effect discovered either clinically in workers or experimentally in animals.[3-5] Studies have been carried out on animals exposed to continuous radiations 3 hours a day for 53 days. There were no gross or microscopic tissue changes, and no effects noted on growth or reproduction.

One group of 45 men who were exposed while operating radar for 2 months to 9 years, and another group of 124 men who were exposed for 2 months to 3 years, were examined. There were no abnormal clinical or laboratory findings and no effect on the blood forming or reproductive systems was found. It appears therefore to be fairly well established that the present high frequency radiations exert no ill effect on exposed workers. Future scientific developments in this field, however, must be accompanied by biological experimentation because we cannot assume that wave lengths of new frequencies will not cause damage.

Ultrasonic waves, sometimes called supersonic waves, are elastic vibrations in any solid, liquid, or gaseous medium of a frequency above the range of audible sound (16,000 cycles per second). Their application has varied from submarine detection to the soundless dog whistle, but while at present it is limited, much future development may occur. Ultrasonic apparatus has been devised which transmits silent sound vibrations powerful enough to ignite paper, and has been considered for such applications as eliminating bacteria and molds, drying inks, and breaking up suspensions of solid particles.

Ultrasonic waves follow the physical laws of audible sound with the addition of some phenomena due to their high frequency. Biologically, they exert a very different effect. Since 1928 ultrasound has been shown to have destructive capabilities for biological tissue. The changes induced vary from simple heat generation to cell rupture. Sudden explosive liberation of dissolved gases in the target tissue has occurred. In one experiment, 37 animals were subjected for 5 to 15 minutes to focused ultrasound produced by expansion and contraction of a quartz crystal.[6] Reversible and irreversible nerve tissue damage was produced, causing cortical blindness, paralysis, ataxia, or death.

In this experiment the sound traveled only a few millimeters to the animal but it is possible that future industrial exposure to ultrasonic waves may be dangerous. The indications are that the danger limits will turn out to be very high and probably will be encountered only under special conditions. There have been no studies on this phase of the problem in the literature as yet but obviously they are indicated.

The problems already discussed constitute an important but incomplete segment of our newer peacetime technology. I have not included the problems of the new developments in aviation, in industrial biology, in acceleration, or temperature changes. There has been no mention made of the new weapons of destruction—the radioactive cloud, the atom bomb and biological warfare, or the results associated with them. An attempt has been made to omit the purely theoretical advances

in research and development. However, private industry and governmental agencies are spending annually on scientific research over $1,200,000,000. This work will narrow the gap between the visionary products of today and the actualities of tomorrow, and will furnish us a constant source of associated health problems.

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Training in Engineering Aspects of Atomic Energy

The Massachusetts Institute of Technology announces a school for graduate training in the engineering aspects of atomic engineering. Work will be done in the production plants of the Atomic Energy Commission operated by the Carbide and Carbon Chemicals Corporation at Oak Ridge, Tenn.

"The purpose of the school is the education of graduate students in several fields of engineering under a program which is designed to develop their ability to apply basic principles to the solution of technical problems encountered in industry with emphasis on the engineering aspects of atomic energy."

Admission to the new school is restricted to graduate students in the several engineering departments of the Institute who have been in residence at M.I.T. at least one term and are U. S. citizens. Further information can be obtained from Professor William A. Reed, Massachusetts Institute of Technology, Boston, Mass.

Proposed Report on the Educational Qualifications of Community Health Educators*†

I. General Scope of Health Education

The health educator helps individuals and groups to recognize, understand, and share responsibility in solving personal, family, occupational, and community health problems. From facts secured with the aid of technical specialists, he interprets health needs, desirable health behavior, and the services of professional health agencies. He develops situations in which actual learning takes place on the basis of factual data provided by technical experts in medicine, dentistry, engineering, nursing, nutrition, and other sciences.

A successful total program of health education in a community requires more than publicity alone. It requires the development of satisfactory learning experiences within organized groups in school and community. It includes the training of other personnel, in the fields of health and of education, to make effective use of the educational opportunities presented by their contacts with individuals and groups. The health educator supplements, in an organized and continuous way, the work of other educators and public health workers, but he replaces none of them.

The first program of study in health education ever offered in a school of public health was established in 1921. Since that time the emphasis upon health education and the demand for properly trained health educators has constantly increased. Health education is now an important field of service in the modern public health program, with recognized techniques and procedures.

The Committee on Planning in Health Education of the Public Health Education Section of this Association, in an unpublished report, estimates that about 460 health educators are now employed by health agencies, about 300 of whom have completed graduate courses in recognized schools of public health. A survey by the committee at the beginning of 1947 indicated that these health educators were distributed as follows:

Federal health organizations	14
State health departments	160
City and county health departments	126
Voluntary health agencies	160
Total	460

No data are available concerning the number of health educators employed by schools and colleges.

The committee just mentioned has estimated the need for health educators on the basis of present population groups, health departments, school systems, and voluntary health agencies, to be as follows:

* The Committee on Professional Education of the American Public Health Association publishes this report before transmittal to the Governing Council in order to permit the members and Fellows of the Association to review it and to offer criticisms and suggestions in the further consideration of the report. This report, like all other statements of the committee on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought.

† This proposed report is a revision of the Report on the Educational Qualifications of Health Educators approved by the Governing Council on October 13, 1943 and is intended to supersede the earlier report.

Local health departments	1,948
State health departments	219
Federal health agencies	40
Voluntary health agencies (all levels)	2,331
Local school systems (supervisors)	1,311 to 2,300
State school systems	48
Federal office of education	6
Teacher training institutions	310
	6,213

This estimate omits specialists like writers, editors, audio-visual specialists, research analysts, photographers, and librarians, of which health departments were estimated to need 335. It omits also the health teachers, employed or needed in the 29,000 public high schools and other secondary schools and the few hundred in colleges other than teacher training institutions.

These figures as well as the present acute shortage of adequately trained health educators give promise of employment and useful service for the young man or young woman entering the field. Increasing recognition is being given to the importance of the total, unified, community-wide program. Promotional progress may thus be anticipated by the beginning health educator both through the expansion of his program and through transfer to the service of larger population groups, as his ability is demonstrated.

The health educator in the health department works under the administrative leadership and direction of the health officer. The health educator working in the school system as a teacher, coördinator, supervisor, or consultant, is a member of the staff of the school and will, of course, meet whatever professional educational standards are set by the school for the type of work involved. The health educator in a voluntary health agency is employed as a staff member or as executive secretary. A health educator serving the total community may be jointly employed by health department, school system, and voluntary health agency, or by any combination of them. Joint planning is needed in any community-wide program.

The educational qualifications of the health educator, whether employed by a governmental or by a voluntary agency, should meet generally accepted standards. This report proposes *desirable areas of competence for the community health educator,* based upon the functions which he is expected to perform. The recommendations are made for the guidance both of officials responsible for the appointment of health educators and of individuals looking forward to careers in health education.

The professional standing of persons now performing creditable service as health educators has been established. Successful experience and demonstrated ability should be recognized at the present time as evidence of professional qualifications.

Educational qualifications for health educators working entirely within a school system although needed are not proposed in this report, as the preparation of such qualifications is not a function of this Association. Schools have their own planned and organized program of health education which should be a part of the total community program. Schools are broadening their concepts of their health education responsibilities to include a consideration of home and community, because they find that children cannot practise what they learn at school unless adult customs in the home permit it. At the same time health departments are recognizing that community programs of health education in which schools do not participate have lost much of their potential influence.

Other forces are moving us toward unified community programs. Other groups, like agricultural extension workers, are beginning to incorporate health education in their program.

Voluntary health agencies are finding that sporadic educational programs promoting a single goal may prove to be ill timed, competing, confusing, and ineffective. They are turning to community planning and coöperation.

The recognition that all health educators should concern themselves with the total community program has brought with it a realization of the breadth of training that all health educators need. Health authorities have realized that this public health worker is an educator by profession, that he works with schools and needs training in general education and school health education as well as in public health education.

School authorities have realized that health educators in school systems need instruction in public health and the work of public health agencies as well as in hygiene and the public school procedure. In suggesting the training of the community health educator the committee has in mind that in the absence of a school health educator, he will work with school administrators, supervisors, teachers, and curriculum committees, but that he will not ordinarily supervise classroom teaching. State laws, school authorities, and professional groups in education have set requirements and credentials for teachers and supervisors at various levels. Such standards are not a responsibility of this Association. The committee believes, however, that the health educator who meets such standards in general education and also the qualifications listed below, will have an excellent professional background for school health education.

II. The Functions to Be Carried Out in the Total Program of Community Health Education

The following functions are believed to be essential for carrying out complete community-wide programs in health education. They are not the functions of any one health educator and it is not expected that any one health educator will have special skills in all the knowledge areas involved. Health educators in various positions, however, will be expected to undertake some or all of the following functions or activities which involve the formulation of plans and methods, the application of specific techniques and skills, the supervision of the work of others, and the maintenance of group relations.

The functions of health educators in community-wide programs of health education are:

In accordance with the administrative policy of the health department or other employing agency:

1. To assist in planning and organizing a program of health education of suitable scope and activities to meet adequately the needs of the community, state, or area to be served. This includes, at the outset and continuously thereafter, a study or survey of the needs and resources with the aid of technical experts and the determination of health problems by lay and professional groups.
2. To assist the area to organize for health education.
3. To assist in establishing and maintaining close, coöperative, working relationships between all agencies (official and nonofficial) which may contribute to health education.
4. To aid in stimulating, organizing, and guiding in-service training programs in the field of health, for employed personnel, in accordance with the policy of the agency or institution involved; including:
   a. Health agency personnel
   b. School personnel
   c. Personnel of other agencies
5. To aid, in accordance with the policy of the institution concerned, in planning the health education aspects of pre-service training programs for professional personnel, including: (a) public health personnel, (b) school personnel, and (c) others.
6. To provide consultation and guidance to various individuals and groups (such as Parent-Teacher Associations, service clubs, and others) in developing and improving

the health education aspects of their programs.

7. To assist in promoting, organizing, and guiding study groups in the field of health for adult and group work agencies, such as divisions of adult education or young people's clubs.
8. To contribute to the improvement of the quality of the health education of pupils or students in accordance with the standards and policies of the school system or institution (in the absence of or in coöperation with a school health educator).
   a. Through aid in planning school health programs and curricula of health instruction
   b. Through conferences with teachers, supervisors, and school administrators
   c. Through such other educationally sound activities as the school may desire
9. To assist in stimulating and establishing adequate public health and school health library facilities.
10. To assist in organizing and operating an informational service to provide answers to inquiries; and in answer to requests, to suggest source materials and source references.
11. To be responsible for the preparation, selection, assembly, and distribution of health education materials, using the services of special technicians and health experts whenever possible.

    Such materials include:
    a. Reports and other printed materials
    b. Visual aids, such as motion pictures, film strips, photographs, graphic materials, exhibits, and posters
    c. News releases and radio scripts
12. To organize and assist in conducting a speakers' bureau, conferences and meetings.
13. To assist in planning and, in accordance with the policy of the agency, in preparing the health education budget.
14. To encourage, and assist in the development of efficient records and reports of all health education activities in order to facilitate the quantitiative analysis, evaluation, and interpretation of the health education program.
15. To assist in the establishment and employment of methods for continual appraisal, in order to evaluate the effectiveness of all phases of the total health education program.

A job analysis of existing positions reveals wide variations in their scope. In general the health educator employed by a health agency is (1) a director of health education, or (2) a staff member with the title of health educator. Other specialists such as editors, audio-visual specialists, research analysts, photographers, and librarians are commonly employed in the larger agencies.

III. Educational Background

The procedure used in determining the desirable educational qualifications here listed, was to analyze each of the above functions in terms of needed professional qualifications in basic sciences, social sciences, and public health, and to group these qualifications in suitable areas.

Certain facts should be borne in mind in approaching this discussion. Not all positions in health education, as indicated above, are of the same scope. The health officer or other appointing authority may not deem it necessary to require all the qualifications listed below for every position. *They are the qualifications believed desirable for the director of a large and complete program.* Nevertheless it is believed that the continuing improvement in the training of health educators will provide more and more workers who have this training, and that such a person will eventually prove most useful.

Experts in various techniques who are not health educators are commonly needed to assist in editorial work and in the development of films, exhibits, and other graphic materials. The health educator concerned with the production of such material will know the nature, limitations, and possibilities of the processes involved. He will know how to work effectively with printers, motion picture producers, and other specialists. This report does not consider the qualifications of these technical experts.

It is clear that the health educator will be helped by a broad cultural background and by a knowledge of (a) the structure, functions, and care of the

body, elements of the more common pathologic processes, and elements of epidemiology and public health procedures; (b) motivation and behavior in human life; (c) society as it is constituted, social forces and their control; (d) forces which affect living-environment and economics; (e) the scientific method in approaching the process of living, distinguishing science from pseudo-science; and (f) the processes of education—why we learn and how we learn.

There is also need for knowledge and skills which are more specifically professional in nature. The division between essentially basic preparation and strictly professional training cannot be readily drawn. It is not the purpose of this committee to indicate here a specific training program in terms of institutions to be attended, degree secured, years of study, or specific courses taken.

Some health educators have begun training for this field immediately upon reaching the university level. More will do so in the future with the increasing number of schools offering an undergraduate health education major.

At the same time it is recognized that several of the professional fields in the health and social sciences, including education, contain many of the elements of training which are desirable for the health educator. Many successful health educators have acquired their training through supplementing the training in one of these professional fields by study in those previously omitted areas of knowledge which are required for health education. It is not feasible to discuss here the entrance into health education from various professional fields. We shall not attempt to define optimal training. We shall attempt to state the essential qualifications.

Present requirements in the training of health educators should be sufficiently flexible to be adapted to the scope of work required from the individual concerned. There follows a statement of desirable backgrounds and competencies for the health educator, organized under 7 major areas and based upon the duties to be performed in a complete program of health education. The major purpose of this statement is to help those who may wish guidance in preparing for a career in health education. It does not represent recommended minimum criteria for a graduate degree in public health or health education.

1. In the field of *Basic Cultural Education* involving the development of appreciations and skills in the use of the English language, it is assumed that all health educators will have had instruction in English literature, and English composition, and that most health educators will have had some background in general psychology, United States history, and world history.
2. In the *Basic Sciences* it is assumed that all students will have some knowledge of general chemistry, bacteriology, and the structure and function of the human body. Many students will also have had some training in organic chemistry, physics, and biology.
3. Training in *Education and Educational Psychology* is important to provide a knowledge of and functional experience with the learning process, principles and practices of education, methods and possibilities of adult education, the nature of the school health program, educational supervision and administration, and in-service training. It is assumed that all students will have some background in educational psychology and the principles, theory and social aspects of education, as well as professional training and field work in school health education and in public health education, including community organization. Many students will also have had an opportunity to study child growth and development, the elementary and secondary curriculum, and school administration. Some health educators will have had much more extensive study in this field.
4. In the *Social Sciences*, where we are concerned with the racial, social, and cultural characteristics of people and their mores, and the significance of the economic status of population groups, it is assumed that all health educators will have some background in general sociology and that most of them

have some knowledge of political economy and cultural anthropology. If the Health Educator should have come from the social work field, he may have given special attention to comparative religion, social dynamics, and special problems of race relations and of publicity.

5. No health educator can be expected adequately to understand and interpret scientific health facts or the work and program of technical experts and health agencies without sufficient *public health* training to give him a knowledge of basic principles in the organization and administration of public health, personal hygiene (including mental hygiene and nutrition), environmental sanitation, methods of communicable disease control (including the nature of causative organisms and methods of transmission), public health statistics and the principles of statistical reliability, and the nature (not necessarily the skills or technics) of public health laboratory procedures.
6. In *Public Administration,* where we are concerned with governmental and community organization, the nature and functions of community agencies, and principles of planning, all health educators may be expected to have some background in social work agencies and most of them will have had some instruction in the field of government.
7. There are many needed *Special Skills in Health Education.* These include public speaking; the use of methods and materials; evaluation of sources of material and information; the writing of informative and friendly letters; the compilation of bibliographies; filing and clipping methods; the writing and editing of material for publication; the use of the printing and duplicating processes; effective distribution of educational material; the nature, preparation, and use of visual aids; possibilities of community participation in the development of educational material; press relations and technics; the organization and conducting of meetings; technics for the interview and consultative conference; the discovery of leaders and the way to work with them; and the use of group work methods. It is expected that instruction in public health education and school health education supplemented by field work and practical experience added to the background of general education will have provided these special skills at least in some degree.

IV. Graduate Instruction

The courses in public health are usually covered at the graduate level. This training furnishes the professional, factual background of the health educator, who will profit by having such instruction presented by specialists, by studying in some of these areas with other public health workers like those with whom he will be professionally associated, and by having his instruction in these rapidly developing sciences just before beginning his professional career.

If the Bachelor's degree is not taken in a teacher training institution, much of the work in education will usually need to be taken after the Bachelor's degree, but it is desirable that most of the work in general education be taken prior to the graduate training in public health and health education. The more highly specialized professional public health courses should not be pushed down into the undergraduate level.

Some colleges and universities are offering a four year undergraduate major leading to a Bachelor's degree in health education. Usually the program is organized through the school of education, and the emphasis is upon *school health education.* This training usually prepares one to become a member of a school staff in the capacity of health teacher or coördinator. Well planned programs of this type serve as a means of supplying more trained people in school health education, and as a valuable reservoir from which to select well qualified students for the graduate training in *community health education.*

At least three months of supervised field work should be required in the training of all health educators. There are advantages in having this field work prior to the completion of graduate training in public health. The prospective student learns the nature of the work and something of his aptitude for it. His professional courses will be more meaningful to him. However, the field work may properly be taken after the

completion of the formal courses, before the awarding of the degree.

V. Personal Qualities

A candidate for a position as health educator should possess such personal characteristics as creative ability, leadership, good personal health, good judgment, pleasing personal appearance, common sense, and adaptability. Such important characteristics, along with the ability to size up and meet situations, and the ability to present pertinent facts simply and effectively, are not guaranteed by academic records in formal courses of instruction. The health practices of the health educator himself are also important. Study and improvement in methods of determining aptitude of the prospective students for this profession are needed.

VI. Length of the Training Period

If one were to enter upon a program of planned study in the first year of university life, this essential training for public health education could not be secured in less than five years. Study beyond this point would be desirable, especially for those aiming for positions of larger responsibility. If such a five year program were followed, the essential basic preparation could be obtained by a four year course leading to a Bachelor's degree in health education or one with major emphasis upon: (1) the basic and health sciences, (2) education and educational psychology, and (3) the social sciences.

The content and extent of the graduate work required would vary according to the amount of undergraduate preparation, the interval between undergraduate and graduate study, and the quality and type of experience the individual has had. But, including the three months of supervised field training, the very minimum of time required for this training would be twelve months following the Bachelor's degree.

From the standpoint of the work to be done, a considerable degree of professional maturity is needed. Usually only one community health educator is employed in a health department or volunteer agency, so that he is responsible for the program rather than being a staff member in his first position. This demand for maturity explains in part why many mature persons have, through further study, transferred to health education from allied fields. If salaries in community health education can be made commensurate with the expanded opportunity for service we may expect to recruit many able students from among the best high school teachers of health or science who have demonstrated interest, aptitude, and ability in developing community activities. There is need for other positions or field opportunities leading toward community health education and from which we may recruit trainees.

In those institutions which offer a doctorate in this field the usual three years of study after the Bachelor's degree are required. Roughly there is one year of study in education, one year in public health, and one year in research.

VII. The Place for Graduate Training

Most of the accredited schools of public health offer training for community health educators. They offer to the student a staff of experts in public health and health education together with the opportunity to work with students who are entering other specialties in public health. They are the only institutions in which public health training has been standardized. At present these schools cannot accept enough students to meet the need for community health educators. There is urgent need for the expansion of these facilities or the accrediting of graduate courses elsewhere. Certainly they do

not now have room to train (in co-operation with the school of education in the same university) the needed school health educators. It is expected that, for the present at least, most school health educators will be trained in schools of education with special facilities and staff for a curriculum in school health education.

Programs of professional study in health education can best be offered in those institutions which are providing professional education in other fields of public health and which have instructional facilities in the other areas of knowledge required. Field training stations should be available for all students in health education.

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THE NATIONAL HEALTH ASSEMBLY OF 1948

THE National Health Assembly, which met in Washington on May 1–4, under the chairmanship of Federal Security Administrator Oscar R. Ewing, faced two serious handicaps—shortness of time for preparation of the program and the danger of political repercussions in an election year. These two handicaps were overcome with remarkable success.

Some 850 persons attended the Assembly, representing a wide diversity of professional and public interests; and including the American Public Health Association, the American Medical Association, the American Dental Association, the nursing organizations, the farm groups, the labor unions, the women's clubs, and many more. The object of the Assembly was to outline a program for health advance during the next ten years. It worked through fourteen well organized and active sections covering the needs for professional personnel, for hospital and health center facilities, for medical care, for local health needs, and for research in the health field; and the preparation of programs for maternal and child health, rural health, dental health, mental health, nutrition, environmental sanitation, care of the chronic diseases, rehabilitation and general state and community planning for health.

The reports of the various sections were ably summarized at the closing session by Quincy Howe of CBS (see page 858)—an innovation which might well be followed at similar meetings; and the major resolutions will be made available for the public in printed form. No startling new facts were brought out and no ambitious trails were mapped out for the future. Goals accepted by intelligent public health experts were, however, clarified and buttressed by effectively marshalled evidence indicating the need for increased knowledge of basic facts, better machinery, ampler provision of personnel funds. A few controversial issues, particularly federal compulsory insurance, were recognized as not commanding unanimous support; but the really astonishing thing about the conference was the relatively large area of agreement. The panel on Medical Care, for instance, chaired with the greatest skill and wisdom by Dr. Hugh R. Leavell, unanimously adopted the following recommendations:

1. Adequate medical service for prevention of illness, care and relief of sickness, and promotion of a high level of physical, mental, and social health should be available to all without regard to race, color, creed, residence, or economic status.
2. The principle of contributory health insurance should be the basic method of financing medical

care for the large majority of the American people, in order to remove the burden of unpredictable sickness costs, abolish the economic barrier to adequate medical services and avoid the indignities of a "means test."

3. Health insurance should be accompanied by such use of tax resources as may be necessary to provide additional
   a. Services to persons or groups for whom special public responsibility is acknowledged and
   b. Services not available under prepayment or insurance.
4. Voluntary prepayment group health plans, embodying group practice and providing comprehensive service, offer to their members the best of modern medical care. Such plans, furthermore, are the best available means at this time of bringing about improved distribution of medical care, particularly in rural areas.
5. The people have the right to establish voluntary insurance plans on a coöperative basis and legal restrictions upon such right (other than those necessary to assure proper standards and qualifications), now existing in a number of states, should be removed.
6. High standards of service, efficient administration, and reasonable costs require:
   a. Coördination of the services of physicians, hospitals, and other health agencies in all phases of prevention, diagnosis and treatment;
   b. Effective coöperation between the providers and the consumers of such services.
7. A medical care program itself will not solve the health problems of the nation. It must be coördinated with all efforts directed toward providing the people with adequate housing, a living wage, continuous productive and creative employment under safe working conditions, satisfying recreation and such other measures as will correct conditions that adversely affect the physical, mental, and social health of the people.

These resolutions—with many adopted by other sections—represent a major step forward along the road to better health for the American people. The endorsement of the principles of group practice and group payment embodied in the resolutions quoted above are almost identical with the recommendations made by the Committee on the Costs of Medical Care in 1932. Their adoption by representatives of the A.M.A., of the Physicians Forum, the C.I.O., and the Cooperatives in 1948—that is something new and something of the first importance. The Health Assembly did not register any dramatic victory over the twin foes of poverty and ignorance; but it did close the ranks of the health army for definite progress in a unified advance toward immediate goals. The Health Assembly was described by one delegate as "Democracy in Action." This was an apt characterization. As a result of these four days the public health worker and his various professional allies have been brought into a closer and more intimate contact with the consumer groups than has ever been accomplished before. The team work developed in the Health Assembly has real promise for the future.

WHAT IS EPIDEMIOLOGY?

SIX years ago,[1] we asked in these columns the question "What and who is an epidemiologist?" The answers were fruitful; but they were necessarily related mainly to the type of practical service rendered by the physicians employed in a health department in tracking down specific epidemics of disease. At that time, W. L. Aycock[2] suggested that a more vital question would be "What is epidemiology?"

This problem seems specially pertinent today. There are two major lines of approach to the basic theoretical knowledge on which applied epidemiology must be based. One is experimental study in the laboratory—the other observational study in the field. The avenue of laboratory approach has yielded brilliant results, and in recent years has tended to dominate the field. It has distinct advantages. In the laboratory, we can—in large measure—hold all factors constant except the

one we are studying and this makes determination of its influence definite and precise. There is, however, an inevitable disadvantage. The controlled factors may actually be of vital significance in nature; and by their elimination we may reach conclusions which do not at all correspond with the complexity of actual phenomena in the field. Both approaches are essential.

The contributions of field epidemiology were outstanding in earlier days. Snow and Budd had no laboratories; but, long before Pasteur, they laid a firm basis for the epidemiology of cholera and typhoid fever; and they deduced from field observations almost all the properties of those causative factors in these diseases which were later to be observed under the microscope. Hirsch, in his *Handbook of Geographical and Historical Pathology,* understood clearly the relation of malaria, first to "a material and specific poison generated in warm climates and seasons," related to organic decomposition; and, second, to "the degree of atmospheric moisture or of the atmospheric precipitation that results therefrom." He even knew that "wherever malaria is endemic at more or less considerable elevations, the seat of the disease is always a valley with a small declivity or a basin-like depression in a plateau"; and that "we find malaria exceedingly common in small and often definitely circumscribed spots by the sides of lakes, small streams or brooks, pools, ponds and ditches." H. R. Carter, by his field observation of the fact that the vicinity in which a case of yellow fever had occurred became infective only after a period of 2–3 weeks, laid the basis for Reed's conclusive experimental approach at Havana.

Theobald Smith, himself a laboratory experimenter of supreme genius, pointed out that inference from field observation "looks at things in nature, describes and compares them, and deduces from such comparisons certain underlying concepts. The experimental method takes the same phenomenon and tries to check or limit all but one of the activities entering into it so that this one activity can be observed, recorded, measured, and weighed. . . . Both methods have their special advantages and disadvantages . . . the experimental method must not let too many machines get between it and the whole and must find some way of putting the fragment surgically removed for experimental purposes back into the whole"; and "the comparative method is frequently in position to restrain the generalizations deduced from experimental procedures and to keep the experimenter from steering away from the goal, which is an understanding of totality."[3]

A particular problem has reached the stage of experimental investigation only when field observation or prior experiment has indicated the exact question to be asked. Before each fruitful experiment, there must be a hypothesis; and the formulation of this hypothesis is perhaps the most important and exciting event in scientific thinking. It is courage and vision—checked for fundamental soundness—in developing pregnant hypotheses which seems a somewhat rare quality in present-day epidemiology. W. H. Frost, one of the greatest of all American pioneers in this field said: "Epidemiology is something more than the total of its established facts. It includes their orderly arrangement into chains of inference which extend more or less beyond the bonds of direct observation." To this sort of epidemiological thinking, Aycock and his group at Harvard have made notable contributions during recent years.

The pitfalls in the path of sound epidemiological thinking are many. We must, first of all, face the fact—obvious but often forgotten—that the entities with which the epidemiologist deals are epidemiological and not clinical in nature. There is no more serious fault in our practical defenses against communicable

disease than our habit of dealing with scarlet fever and septic sore throat and otitis media as different clinical entities (as they are) but not as manifestations of one epidemiological entity, which is the important aspect of truth to the health officer. On the other hand, Aycock [4] has pointed out that in one clinical disease, Landry's paralysis, the same pathological findings may be due to a wide diversity of causal factors. He suggests the bold hypothesis that—diverse as the so-called causative agents are in this case—they may perhaps operate upon the tissues through the same biochemical mechanism. He cites the extraordinary case of a strange epidemic at Durban, which was considered by various clinicians to be poliomyelitis, and ginger paralysis and tick paralysis and the Guillain-Barré syndrome. It proved on careful epidemiological study to be due to cooking oil contaminated with tri-ortho-cresyl phosphate.[5] Certainly, where epidemiological phenomena can be reduced to terms of biochemistry (as has been the case with diphtheria and tetanus) the road to practical control will be opened in a startling fashion. Such studies as have recently been made [6] on the histological reactions of embryonated eggs to influenza virus may perhaps open the way to understanding of the biochemical, as well as the histological, reactions involved.

Our problem is complicated by the splitting up of many so-called "species" of pathogens into serologic "types." Aycock [7] is skeptical of the importance of such types in comprehending the basic principles involved, although, of course, recognizing their importance in studying a particular epidemic episode. He says that "with the exception of meningococcal meningitis, there is no instance of any degree of correlation between a single serological type and a single disease process."

Even if the chemical processes involved in pathological reactions to an invading germ were identified, it would still be important to realize the complexities involved in the answers given by the human body to the insults offered by foreign invaders. We must never be blinded by the over-simplified conception that we may discover the cause of any disease. The tuberculosis bacillus is not *the* cause of tuberculosis. It is *a* cause of that disease. You cannot have tuberculosis without the *Mycobacterium;* but half the people whose tissues have been invaded by the *Mycobacterium,* as shown by tuberculin tests, suffer from no disease in a clinical form, although they no doubt show minor pathological reactions to the invader.

Inherent "vital resistance" plays an important role in every departure from normality sufficiently marked to be labelled as "disease." We rarely know what this means; but we do know that it means different things in different diseases; and that it is a factor of major importance. Read the accounts of the attempts to climb Mt. Everest and note the different reactions of different individuals to extremes of cold and to fatigue. Study the records of accident-prone industrial employees and accident-prone automobile operators, and realize the important role of neuro-muscular balance in so apparently simple a phenomenon as a mechanical accident. In the clash between a human body and an invading germ, the differences between individuals in the field of biochemistry are equally significant.

Nutrition may be, in many instances, a vital factor in the defensive mechanisms of the body. In this regard, many students of the problem will not agree with Aycock. He concludes [8] "that vitamin deficiency as a factor in susceptibility to infection is not a general epidemiological principle. The indications are that only deficiencies of certain vitamins affect susceptibility to certain types of infections and that these occur only in limited areas where these vitamin deficiencies reach a sufficiently severe degree to produce tissue changes which are favorable sites for secondary infection." This may be true if the conclusion is limited to

vitamin deficiencies and to the actual process of invasion by pathogens. We doubt, however, whether prevalence of typhus fever in times of famine is due only to poverty and increased infestation with lice (as suggested by Sigerist [9]); and in tuberculosis, the relation of starvation to increased morbidity and mortality seems highly significant.

Perhaps Aycock's most impressive practical contribution to the science of epidemiology lies in his emphasis on the importance of the influence of climate and seasons on the prevalence of disease. It is strange how this relationship has been neglected since research in epidemiology has been limited to the laboratory and has ignored the area of field experience. The winter incidence of upper respiratory infections is the most outstanding challenge in the whole science of epidemiology.

In those diseases which are disseminated by a specific arthropod vector, the influence of season is obvious and clearly recognized. Aycock [10] demonstrates a beautiful case of four widely different seasonal curves for tularemia (with peaks varying from April to November) depending on the particular vector involved. What is commonly ignored, however, is the peak of intestinal diseases in hot climates and seasons and of respiratory infections in cold climates and seasons. It seems clear that in these instances the phenomena cannot be explained by influence on the parasite but must be sought in the physiological status of the human host. The fact that Dick and Schick tests in warm climates show the same infection rate as in cold climates, with an insignificant rate of clinical disease, is proof-positive on this point. North, many years ago, suggested that one very simple factor of seasonal physiologic variation was the relative distribution of blood supply to the intestinal and nasopharyngeal mucosa at different seasons.[11] Aycock, in the paper cited above,[10] gives striking examples of seasonal ebbs and flows of physiological status (iodine content of the thyroid gland, organ and gland weights, resistance to acetonitrile poisoning, etc.). In a later communication [12] he presents a striking study of the amplitudes of seasonal fluctuation in various epidemic diseases and reaches the following conclusions: "Three distinct patterns of amplitude of seasonal variation are found in a number of infectious diseases. In upper respiratory bacterial infections as a group, the amplitudes suggest the operation of a single arithmetic variable consistent with seasonal variation in susceptibility. In a second group, comprising diseases transmitted by intermediary means, the amplitudes are consistent with seasonal variation in the virus reservoir. In a third group comprising upper respiratory virus infections, the amplitudes lead to the inference that both seasonal fluctuations in susceptibility of the human being and in the virus reservoir are determinants."

It has been suggested [13] that the formula for a case of clinical germ disease may be written as follows:

$$A\ (a_1\ a_2\ \ldots\ a_x) - B\ (b_1\ b_2\ \ldots\ b_x) = C$$

Letting A = the power of the germ to produce disease

$a_1\ a_2\ \ldots\ a_x$ = various factors increasing the transmissibility (polluted water or milk, flies, mosquitoes, etc.) or the virulence of the germ

B = the power of the human host to resist disease

$b_1\ b_2\ \ldots\ b_x$ = various factors increasing the resistance of the host (age, specific immunity, nutrition, etc.)

C = a clinical case of a germ disease (or the absence of such a case if the resultant of the factors in the opposite half of the equation falls below zero)

The task of the practical epidemiologist is to concentrate on the weakest links under A (elimination of mosquitoes, pasteurization of milk, purification of water, use of antibiotics, etc.), or on the factors under B which are most easily strengthened (through specific immunization, improved nutrition, personal hygiene and the like). The function of the theoretical epidemiologist is to study all the possible factors in such an equation and to evaluate their relative importance.

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THE COBBLER'S CHILDREN

ONE may logically ask why the question of routine chest x-rays for all admissions to general hospitals should be a subject for discussion at this time. The public health significance of a procedure which can be used to determine the presence of disease of the heart or lungs in 16,000,000 hospital admissions annually needs no emphasis. The advantages to patient and hospital staff, the usual findings, the technical methods available, their respective cost, even ways for financing such a program, have all been determined and have been widely publicized.[1] The fact still remains that in 1948 less than 3 per cent of the more than 6,000 hospitals in this country were on record as having adopted x-raying of all admissions as a routine procedure,[2] despite the fact that about one-fifth of all deaths from tuberculosis occur in general hospitals.

With these considerations in mind, a brief summary of the present status of routine hospital admission x-ray service would seem pertinent. It is generally recognized that a chest x-ray is as important a part of the routine for every hospital patient as a blood count, serology, or urine examination, and will reveal the presence of unsuspected disease more often. Numerous studies have shown that approximately 2 to 3 out of every 100 admissions to general hospitals will have x-ray evidence of tuberculosis. Half of the cases will be active, a rate at least twice that found in the general population. As many more patients will show other types of pulmonary pathology or evidence of cardiac disease. These are individuals already in hospitals, physically and psychologically receptive to treatment. To cure such a patient of a minor infection and discharge him with still undiagnosed active pulmonary tuberculosis is hardly in keeping with the highest traditions of medical care, and certainly in no way consistent with the ideals of public health.

The routine chest x-ray of all admissions to general hospitals serves a no less useful purpose in the protection of the members of the hospital staff. A higher rate of tuberculous infection has been consistently found among doctors, nurses, and attendants in general hospitals as well as tuberculosis hospitals, compared with groups of similar age, sex, and race composition not so employed. The

presumption is strong that the source of their infection may be the patient with undiscovered tuberculosis. Medlar's recent studies[3] would certainly lend weight to this hypothesis. The constantly increasing proportion of non-reactors to tuberculin among adolescents and young adults further accentuates the danger of such exposure in hospital personnel. Even if we disregard the important factor of the hospital's human responsibility for the safeguarding of the health of its employees, the desirability of maximum protection for staff in these days of personnel shortage remains. The cost of compensation, which is being awarded in a steadily increasing number of states to hospital employees who contract tuberculosis in the course of their employment, is an additional consideration.

Equally explicit information is available as to technical methods and costs. There is no one method universally applicable to all situations, and the technique to be employed will depend on the daily hospital admission rate and the space and facilities at hand. For larger institutions, with admission rates of more than 25 patients daily, some type of miniature film equipment has been recommended. Full size film is advised for hospitals with fewer daily admissions. The initial outlay for a photo-fluorographic unit is high, $5,000 to $12,000, with an overall cost per film of approximately $.50. Large films can be taken with little or no additional equipment, but each x-ray will be more expensive and an additional burden will be thrown on the technical staff. A satisfactory compromise for institutions admitting approximately 25 patients daily is the magazine cassette,[4] which has been employed by the chest clinics of the New York City Department of Health since 1943. This unit operates like a roll camera, requiring reloading only once for every 50 exposures. It is rented for a nominal fee and uses full size paper film in rolls of 50, at a cost much less than that of celluloid film. The interpretation of the x-rays, the follow-up examination on suspicious or definite cases of tuberculosis or non-tuberculous disease, and the necessary record keeping present no unusual difficulties, and are readily incorporated into the hospital routine.

The financial problems involved in securing the equipment can be met in several ways. The hospital may pay for the unit itself. In many areas the city or state health department may be willing to furnish the apparatus, particularly if the latter is in a position to utilize federal funds for the purpose. The local tuberculosis and health association, chamber of commerce, hospital auxiliary, or other good friend of the hospital may make such a contribution. Once the unit has been procured, the cost of its operation, which should not exceed $1 per patient, can be readily met. In private institutions it is usually added to the patient's bill; in public institutions, to the budget.

The most serious drawback to the extension of the practice of routinely x-raying all admissions to general hospitals has been the difficulty in manufacturing photofluorographic equipment rapidly enough to meet the demand. Production is now increasing steadily, delays in filling orders are growing shorter, and this explanation will soon be an excuse rather than a reason. Unless the general hospitals of this country are prepared to carry out their responsibility for this program they may find themselves regarded in the same category as the cobbler in the old proverb whose children always had holes in their shoes.

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Report to National Health Assembly

QUINCY HOWE

Columbia Broadcasting System, New York, N. Y.

THE following stenotypist's report in the style of a radio commentator was a feature of the final session of the National Health Assembly.

The most human of all human interests has drawn us together here in this National Health Assembly. It is the interest in what most of our forefathers called, and many of us still call, the temple of the soul. After all, nothing affects us more personally and more directly than the health of our bodies.

Human nature has therefore played a big part in all of the section meetings of the National Health Assembly, and it is going to play, I think, a still larger part in the summary that I am to present on the work of these sections.

It is human nature for us to want to help others; it is human nature for us to believe that we are right; it is human nature to make mistakes. I have the layman's admiration for the medical profession. I think our doctors are primarily motivated by the desire to help other people. I suspect some of the rest of us may be motivated by more selfish considerations. But, selfish or unselfish, we are reluctant to believe that we are wrong and that the other fellow may possibly be right.

It is the great achievement of this assembly that so many different experts in so many different fields have reached agreement on so many subjects. Just how correct these agreements may be, we shall perhaps learn before the ten years for which we are planning have run their course.

When Mr. Ewing invited me to summarize your findings, I am sure he wanted to give you a final reminder that it is human to make mistakes. So far, you have seen human nature at its best. What you are about to hear will remind you how fallible human nature can also be. But perhaps my years with the Columbia Broadcasting system will come to my aid. CBS, you see, makes it a policy not to permit news analysts to go in for special pleading on the air. We are told to present our material in such a way that listeners can draw their own conclusions, so it is in that spirit that I am addressing myself to my present task.

The radio industry seems to operate on the assumption that most Americans no longer know how to read. Perhaps I should say that the radio industry is simply making a valiant effort to make reading quite unnecessary. I am not going to operate on that assumption, though, today. I am going to assume that all of you here, all of you, not only know how to read, but do read. I shall also assume that all of you have read, will read, or at any rate can read the conclusions that the 14 sessions of the National Health Assembly have reached in their reports.

Instead, therefore, of summarizing these reports in detail one by one, reports that speak so eloquently for themselves, let me just point out certain common denominators in these reports, and then single out a few striking specific points in the individual reports.

Finally, I will try to suggest a few broad conclusions that seem to me to arise from this material.

Now, there is one common denominator, a very human common denominator, that struck me with special force in every one of these section reports. It is this: Each section regards its own field as fundamental, basic, all important, indispensable. And in each case, the logic behind these section reports seems to me absolutely unanswerable.

For instance, who can possibly disagree with Dr. William C. Menninger and the Mental Health Section when they tell us that more than half of all our sick people, inside and outside our hospitals, suffer from some kind of mental ailment? No one can dispute the statement of the Dental Health Section, that dental caries, tooth decay, is the costliest disease known in civilized man. Perhaps some of you would like to challenge Dr. Haven Emerson and the Local Health Units Section when they say that our people can't possibly expect to enjoy better health unless and until they organize themselves into more efficient local health units. Certainly he wouldn't find any disagreement from Dr. Florence R. Sabin and the Community Planning Section. They would agree with him when they tell us that the community must do a lot more planning for its own health.

And in another section, you know that the child is father of the man; the mother is the source of all human life, as Dr. Leona Baumgartner and the Maternal and Child Health Section have explained. But to have healthy children, we have got to have healthy and also properly educated grown-ups, and Dr. James R. Miller and his section on the Chronic Disease and the Aging Process explained this when they pointed to the need, the growing need, for better care for our growing generation of old folks.

Then, Mr. Joseph W. Fichter and the Rural Health Section explained why Americans who live on farms have every reason to consider themselves second-class citizens in so far as medical care is concerned. When you think of that, you wonder about the permanently handicapped and the crippled, veterans and non-veterans, for whom Dr. Henry H. Kessler and the Rehabilitation Section made their appeal.

Then we hear Dr. F. G. Boudreau and the Nutrition Section prove beyond any possibility of doubt that better nutrition is the real answer to better health. Then Mr. Arthur D. Weston, and the section on Environmental Sanitation come along, and they make out an equally unassailable case for better sanitation, purer food, a healthier environment, and, of course, Dr. Algo D. Henderson and the Medical Personnel Section explained the big thing we really need is more and better trained doctors and nurses, and especially assistant personnel. It is also just as true as Dr. Andrew C. Ivy and the Research Section's conclusion that we need more and better advanced research and teaching.

And then Dr. Charles F. Wilinsky, in the Hospital Facilities Section, called attention to the shortage of hospitals and other physical facilities.

Dr. H. R. Leavell in the Medical Care Section perhaps had the toughest assignment of all. He had to get his section to agree on the most controversial single issue before any of the sections: What needs to be done to give the American people the better medical care that they clearly require?

Well, so far I have stressed the differences in all these section reports, but my purpose hasn't been to suggest that they conflict with one another. Rather, I have tried to show how wide a variety of subjects this National Health Assembly has covered. Moreover, it seems to me that the subjects the Assembly has covered do not conflict at all; they overlap. I believe "impinge" is the correct word.

And most of all, they complement and even duplicate each other, complement as well as compliment each other. The need for more and better research, for instance, is a universal need. It goes through all these sections. A good local health unit is going to interest itself in the care of both the young and the aged. It is going to interest itself in mental as well as dental cases; it is going to interest itself in questions of environment as well as questions of nutrition.

Several of these sections have referred to the question of discrimination against Negroes, but discrimination takes many forms, and the best cure for discrimination, after all, is education.

Here we come to what is perhaps the most important single common denominator in all the section reports. Again and again section chairmen pointed out the need for more facts, more research, more information. For instance, how many more doctors, nurses, and medical personnel do we actually need? What do we need in the way of enlarged hospital facilities?

And these questions tie right in with the question of rural health. The Rural Health Section had a lot more information than the section on Mental Health was able to gather. Perhaps that is because we have had country doctors much longer that we have had psychiatrists, but the country doctor is becoming the forgotten man. To the outsider, it might seem the psychiatrist is getting all the breaks, until we read this report on mental health from the Mental Health Section coming up with its urgent request for much more information in a field that is perhaps more tragically understaffed than any other.

Without going into the whole list of section reports and their details—I will do that later—it does seem possible to draw this conclusion now: Nearly all the section reports, as I say, call first and foremost for more information. Surely it ought to be possible to avoid duplication and to send out (instead of duplicating with similar questionnaires and investigating trips) the kind of questionnaire, and gather the kind of information that could be cleared through some central agency and made available to all the groups.

And such an information center would meet the coöperation of all these different sections before it set up shop in the first place.

Now, the friendly attitude that all the delegates to this Assembly have shown toward one another, the interest all have taken in one another's work, suggests that you can pool your efforts in compiling and then applying the information that almost all of you seem to need.

To most Americans shortages is a wartime word. To you who are fighting a never-ending war of your own against all the ills that flesh is heir to, shortage remains just as familiar a word as ever.

First, there is the shortage of highly trained personnel, of your doctors, researchers, and specialists in lots of different fields. Then there is the shortage of assistants, especially dental assistants and nurses. Then there is the shortage of medical schools and medical teachers, the shortage of hospitals, and, it seems, above all else, a shortage of cash. How are we going to pay for all the training, all the equipment, all the services that we need? How are we going to make the career of administering to the nation's health a career that does not require superhuman effort, superhuman sacrifice, or else a superman's bank account?

Perhaps it is not so much a question of salaries as it is a question of less costly training and of greater security for those who are financially equipped to practise medicine, go in for research, or engage in related fields of public health.

Leaving to one side the controversial question of federal health insurance, there does seem to be a rather wide-

spread feeling in which several sections have unanimously concurred—a widespread feeling that the taxpayer is going to have to carry some, probably more, of the financial burden that better health service requires.

The Rural Health Section, for instance, is unanimously agreed that the federal government must bear a greater share of the expense of rural medical care. The farming communities, even the farming states, just haven't got the funds. On the other hand, the local health units must rely largely, I suppose, upon local support—perhaps through local taxation, somewhat after the fashion of our schools.

But, can local communities carry the whole load of maintaining and extending hospital service? And if the state in addition to the federal government comes into the picture, what part has the state medical association to play? What representation will the public have?

Dr. Andrew C. Ivy's section on the Nation's Need for Research in the Service of Health recommends fluid funds from federal tax sources. No less important than the need for funds is the need for people. The two go together. Get the money and you can get the men.

I am not, as I said, going to summarize all these section reports. All of you can read them as well as I can, and most of you can understand what you read in the field much better than I can.

The section chairmen did me the honor last night of telling me what seemed to them the high points in their reports, and I will now try to pass on to the whole assembly here the salient impressions that these section chairmen left with me.

The most newsworthy and the most controversial decisions were those reached by Dr. Hugh R. Leavell's section on Medical Care. These decisions were newsworthy because of the wide area of new agreement among the members of Dr. Leavell's section.

All the groups represented in this section agree that prepayment is the best way to finance medical care. That means insurance. All agree that all the American people are entitled to medical care. All agree that federal funds must be used to finance at any rate some of this medical care.

All agree—and this is important—that the people have the right to set up their own health insurance plans. As you know, there are more than 20 states that do not now permit this but insist that the medical associations must control those health insurance plans.

This section of Dr. Leavell's on Medical Care even agreed that the medical care program alone will not solve all our health problems. This was almost a unique example of humility among the various sections.

The only disagreement among the members of Dr. Leavell's Medical Care Section—and I am not trying to minimize this disagreement, because it is an important one, but it was there—is the question: How to prepay medical care? How to take out this insurance? Some say that we should continue the voluntary method and give free care only to those who need it—a kind of a means test arrangement. That is the system now in force and that is the system that the committee, I believe, has endorsed. Others however, in this section say that we must have universal compulsory federal health insurance and that that need is immediate and urgent.

Now, for the high points of some of the other section reports. Dr. Algo D. Henderson's section on Medical Personnel stressed particularly the great need for nurses, also the need for dentists, baby doctors, and specialists in mental ailments. The big problem in connection with getting more people into nursing seems to be, as in so many cases it is the big problem, economic. They need, among other things, better working conditions, and the public needs to

know more about the prospects and the possibilities of a nursing career.

Dr. Charles F. Wilinsky's section on Hospital Facilities put a lot of emphasis on the need for coöperation between all and among all different groups and elements in the community. They made the point that our hospital system has got to be kept extremely flexible.

Dr. Wilinsky was pointing out last night that new cures that medical science may develop—like these new penicillin drugs and sulfa drugs that have so much speeded up cure of certain diseases that used to hospitalize people for a long time—may radically change the needs of the American people for hospital care. Most hospitals are still run by private, charitable, and religious organizations, but more tax money is going to be needed to do a better job.

Dr. Haven Emerson's section on Local Health Units came up with about as drastic a suggestion as any. They simply urged doubling all personnel and facilities in the public health schools—just double them! At once! As a matter of fact, there are only nine public health schools now in the United States; only nine. Perhaps that could be doubled. There is a need, in any case, says this section, for basic reorganization.

Dr. James R. Miller's section on Chronic Diseases and Diseases of Old Age wanted to stress two points in particular. First, they wanted to stress the importance of diagnosis of these chronic diseases and early treatment for them. After all, it is to the interest of our children to keep us members of the older generation in good shape and fit so we can work and our kids won't have to support us too soon and too long.

The second point that Dr. Miller's section made is the stress on the importance of rehabilitation. Experience in the rehabilitation of war veterans has shown what can be done in this direction. There is also rehabilitation needed among older people who can be and have been cured of some of these diseases that used to be fatal.

Dr. Leona Baumgartner's section on Maternal and Child Health included in their report these words: "A child's feeling about a test in school can produce as important a stomach ache as eating a spoiled custard."

This section on child health and maternal care points especially to the recent decrease in the maternal death rate, but it also points out some rather striking figures and facts. Three out of every five children in the United States live in families that have an income of less than $2,100 a year. Four out of five children live in families that have an income of less than $3,000 a year. And between Pearl Harbor and VJ-Day almost half a million American babies died as compared with somewhat under 300,000 of our fighting men.

The child health and maternal care section urges and stresses also the need for spending more money on the medical care of secondary school children. The amount of money now spent on those children by the states, through the schools now ranges between one cent per child per year and three dollars per child per year.

And this section tells us that the general public and even, I dare say, many members of this Assembly, don't know what great changes have occurred in this whole field of child care and maternal health.

Mr. Joseph W. Fichter's Rural Health Section reports, among other things, that it is not possible for doctors to practise such good medicine in country districts, simply for the lack of facilities, and yet, on the other hand, this section points out that a lot of Americans would like to go back to country living, and more doctors might be willing to go back to country living if they had the hospital facilities, the money, and the cultural opportunities that the rural communities do not now afford.

Perhaps it is worth while to find out, says this section report, what the small town doctors themselves have to say about the prospects of rural medical care, rural hospitalization, and the rest.

Dr. Ivy's Section on Research in the service of health, stresses two very familiar needs that run like a theme through almost all these reports, the need for more money, the need for more funds to be derived from taxes.

Now, one of the most interesting features of Dr. Ivy's Research Section report was that they agreed that there is no lack of zeal among the bright young students. They want to go in for medical and all kinds of scientific research. This applies in all branches. Research is the thing that tempts and attracts the top 20 per cent, the people with the best scientific minds, and this top 20 per cent, ten years ago and more, used to go into medical research and all other forms of scientific research automatically, but something serious has happened.

The discrepancy between the salaries that one gets as a research worker and the salary that he can get if he is a doctor in private practice, or the salary that he can get as a scientist in the employ of private industry—this discrepancy is so great, and the uncertainty of the future for research is so great, that a lot of these best brains among our researchers are going into other fields.

Like this whole question of rural health, the answer on this matter of research in the service of health seems to me to be looking into all our folkways and seeing if we can't plan our whole lives somewhat differently.

Dr. Sabin's Section on Community Planning urges, among other things, that we take a very broad view and define health, not just as not being sick, but as a wide and general sense of well-being, including social and economic conditions, as well as the physical condition. They also warn against selling the people in your community the idea of community health and its importance in various projects until you have the personnel to carry these projects through. All the community must participate in these projects. We need more public health councils.

Dr. Henry H. Kessler's Section on Rehabilitation reminds us that we as people are not so husky as we think. We need to know and hear more about the rather high rejection for physical reasons by the armed services during the war, and we need to break down, and this is a long process, the prejudices that exist against crippled and permanently handicapped people.

Dr. Ernest G. Sloman's Dental Health Section stressed especially the need for more dental schools and more dental research. Dental schools, it seems, need $500 per student in addition to the tuition that the student pays in order to give that student the proper training. The big need here is for research projects—something about dental research—it does not seem as dramatic as in some other fields of research, and yet an awful lot can be done to cut the biggest part of our medical bill, the bill of the dentist, and this dental program ties in with the whole sanitation program because of the possible use of sodium fluoride in drinking water.

Dr. William C. Menninger's Mental Health Section is pioneering in what seems to me perhaps the most important field of any—maybe because it is new. Here are some figures that they come up with: Thirty to 60 per cent of all patients who consult doctors have emotional disorders that lead to physical disorders; 62 per cent of all the inmates of veterans' hopsitals are psychiatric patients; one million of all admissions to Army hospitals during the war were psychiatric cases. There is an urgent need for personnel in this field. It is most important to do something about the state hospitals. We have a tendency to forget

about the inmates and the doctors in those hospitals. These doctors number anywhere from one to 300 patients, all the way to one to 1,000 patients—one doctor, one psychiatric doctor to 1,000 patients in a mental hospital, and outside the hospitals there is only one psychiatrist to every 140,000 Americans as compared to one M.D. to every 750. Barely 1 per cent of our practising nurses have psychiatric training, and they have got to care for half of all the patients. One hundred thousand new beds are needed for psychiatric cases in our hospitals at once, and yet with all this need for beds and nurses, prevention is the only real cure to this psychiatric problem, and the prevention of these mental difficulties and diseases and ailments needs the coöperation of every agency in the community—our teachers, our clergy, our lawyers, our social workers, management, labor, and everyone—it is perhaps the biggest educational job there is. It goes, maybe, to the very roots of our whole way of living.

Dr. Frank G. Boudreau's Nutrition Section says there ought to be a nutrition expert included in every health group; that nutrition is the field in which the most striking advances have been made in the last twenty-five years. We ought to start nutrition work on expectant mothers at the very start of pregnancy. Then we will get better children all through life and a lower maternal death rate. And one point that Dr. Boudreau recalled last night was that during the war, in England, Churchill went to his top scientists and said:

"What is it that must come first on the list?" They said: "See that the British people get first-class nutrition during the war." They got that nutrition, and in spite of having fallen back in many, many other fields, and suffered all kinds of hardships and tribulations, the British health, due to this good nutrition, is better than it has ever been before, and a great part of the explanation, the way the British have told us, is because of the attention they gave to this matter of nutrition.

Mr. Arthur D. Weston's Section on Environmental Sanitation is important because it stresses the external—the importance of external factors in relation to public health.

Now, before summarizing this summary, and drawing one or two final conclusions from the many I have outlined, I think I have a duty to report on one other matter.

As Mr. Ewing explained, this assembly cannot, under the law and under its own rules, recommend any definite legislation. I do not think this prevents me in summarizing these reports and discussions from touching on the question of the membership of the United States in the World Health Organization. Dr. Louis I. Dublin raised the question yesterday from the floor. He did not press his proposed motion to urge Congress to act because Mr. Ewing said it would be out of order. Mr. Ewing made it clear, and I think it was clear to everyone present, that all members of all sections agreed that whatever our other differences may be, we united in wanting the United States to join the World Health Organization.

Dr. Fishbein, of the A.M.A., has already made two strong public statements, though, to that effect here at this assembly, and I have not heard one dissenting voice, and I have heard an awful lot in praise and agreement. For what it may be worth, perhaps I may raise my voice, too, safe in the knowledge at this time, at any rate, that I am expressing something that everybody here feels agreement about.

And this question of the World Health Organization is not the only matter on which this assembly has reached agreement. As I review the high points of the section reports, the high points that the section chairmen wanted stressed, it seemed to me that this assembly has

come to agreement on a great many important matters—matters on which agreement has not always been possible before.

Perhaps the greatest single achievement of this assembly is that all kinds of public organizations have sat down together and worked out common problems and common programs with members of the medical profession and other scientific groups.

Now, some laymen may feel that the American Medical Association has been somewhat slow in coming around to health insurance and to the idea of government aid for health. But look at it from the doctor's point of view: Like all of us, doctors are creatures of habit, and they have acquired their habits in about the hardest way there is. Just try to change some of your own habits. Try to stop smoking the way I did a little while ago; or try pulling up stakes; try going to live in a new community, changing your profession—it isn't easy.

Those of us who have been impatient with the American Medical Association for resisting change show a sad lack, I think, of understanding of human nature. Doctors have to make so many sacrifices. They submit themselves to so many disciplines, they are so overworked just keeping up with their own jobs, that the wonder to me is that any of them have time for anything else. And it is only natural that those who do interest themselves in something beyond their engrossing daily tasks want to hold on to their own tried and tested way of doing things.

That so many doctors not only have taken the time to work with the National Health Assembly but have shown themselves so coöperative, so understanding, so open-minded, seems to me the most promising and the most important development of this whole meeting. The example that the doctors have set us here should encourage all of us to go on with the kind of work that this National Health Assembly has only just begun.

Now, there is no question that the high spot of this assembly is the cooperation between men of science and the general public. This coöperation reminds us that the atomic bomb and atomic energy are not so new as we have been led to believe. Everyone said when the atomic bomb went off that now we are in a new age, nothing is the same as it was before, and now the scientist is out of his ivory tower, and now science has got to interest itself in politics and general affairs, and the general public has got to be interested in science.

But even if there had been no atomic bomb, we would have had a meeting like this just the same. It is all a part of the same trend. The atomic bomb is one part of it, and this meeting is another part of it. It is the trend of bringing the scientists out of the laboratory, forcing the laymen to concern themselves with the impact of science on our lives. Here it happens to be medical science.

There seems no doubt that medical science can do the job. The two big questions are: Where will the money come from and where will the people come from? This assembly is hopeful. It is a hopeful sign because it is a sign of the times. It proves that the scientists and the public can work together, with government officials acting simply as intermediaries, but with the funds that finance this assembly coming from private sources. It seems almost the ideal combination of government, free enterprise, of expert and layman.

Now, as a complete and rank outsider, can I take advantage of the tolerance of this tolerant gathering to close with just one mildly critical observation, not so much of this National Health Assembly as of our American way of doing things.

As I said at the beginning, all these section reports call for more and more

facts. Of course, none of these sections has yet got the complete story. That will never be told. Some of them are just beginning to pioneer. All of them need to correlate what they already know. But we Americans, as a people, seem to have a blind passion for facts as facts. We have an almost mystical faith in statistics. Now, the collection of facts is a necessary and rewarding enterprise, but it is not a substitute for action. It is not a substitute for something that is even more difficult than action, and that is thought. Too many of us simply collect facts simply to avoid having to do anything about it. We are like the fanatic who redoubles his zeal after he has lost the sight of his objective.

During the 1920's, a wise Spaniard, Salvador de Madariaga, wrote a book, *Englishmen, Frenchmen, and Spaniards*. He made the point that the Englishman is the man of action, the Frenchman the man of thought, the Spaniard the man of passion. The Englishman, he said, thinks with his knees and elbows; he acts on instinct, and he almost always acts right, although he cannot, possibly tell you ahead of time what he is going to do or explain afterward why he has done it. The Frenchman, on the other hand, can give a perfect analysis of every situation, but when the moment to act comes, he is mentally muscle-bound and has a hard time putting his ideas into practice. Afterward, however, he can always give a perfect explanation of just exactly what happened.

Now, if the Englishman is a man of action and the Frenchman is a man of thought, the American seems to me a man of fact. Where the Englishman puts all his energy into action, we put all our energy into collecting data. Where Frenchmen put all their energy into theory and logic, we put all our energy into accumulating facts.

This is not a tendency that is peculiar to science. I think my own field of radio is the worst offender. Have you ever seen a market survey, a listener's survey, a breakdown of Hooper ratings? I am going to take a chance now. It is no accident that Dr. Stanton, president of the Columbia Broadcasting System, one of the sponsors of this National Health Assembly, is himself a statistician.

Now please do not misunderstand me, and I hope Nate Halpern, Dr. Stanton's deputy at today's session, won't misunderstand me either. All I am saying is that a great many Americans are completely fascinated by facts. Obviously the American radio could not be where it is, and the American science could not be where it is if our leading people in these fields had not devoted themselves to the pursuit of facts, facts, facts.

But I am not saying anything to this assembly that I would not say to the president of the great organization for which I work if I say that the mere accumulation of facts is not an end, an aim in itself. It is what we do with the facts; it is what we make the facts mean that really matters.

I am not going to tell you people what all the facts that your various sections have gathered together mean. I don't know. But I am sure a lot of you do. In some of the fields that your sections have covered you will, of course, want to go out and gather more facts. Rightly! But in other cases I am sure that you have enough facts to spell out some answers; and in still other cases I bet you know the answers already and your next step is to do something about them.

It is not, however, part of my function to tell you what to do or what conclusions to draw. It is my function to review some of the material that has come before you. I will feel I have done my part if what I have said leads you to continue in thought, in action, and in spirit, the many tasks you have set yourselves and our people.

Clearing House on Public Health Salary Information

CALIFORNIA STUDIES LOCAL SALARY TRENDS

THE California State Department of Health, through its Division of Local Health Service and at the request of Local Health Officers of California, has released two salary studies covering full-time professional and technical personnel in local health departments of the state. These studies are as of October 1, 1947, and as of January 1, 1948, respectively. The October study includes 34 local departments, the January one, 32, but only 25 departments are common to both studies. A total of 40 jurisdictions are included in one or both studies.

In no instance were salaries decreased between October, 1947, and January, 1948. For the 25 health officers in both studies actual salaries paid or range of salaries, 13 remained stationary, and 12 increased during the 3 month period. In 5 instances the increases were less than 10 per cent, but in 3 they were more than one-third. The highest monthly salary of $1,125 remained unchanged.

One more example: of 22 chief sanitarians reported at both dates, salaries of 14 remained stationary; those of 8 increased. The increases were less than 10 per cent in 4 instances, and 11, 16, 27, and 41 per cent respectively, in the remaining 4. A detailed study of this material might well reveal that variations in the extent to which salaries were increased among the separate professional groups, bear a close relation to the separate pressures brought upon them to accept other positions.

The relationship between health officers' salaries and the populations of their jurisdictions is also worth examining. Of the 40 jurisdictions reporting salaries for either October or January or both, 13 had 1940 populations of less than 50,000; in 8 of these the health officer's monthly salary was $600 or more. Of the 10 whose salaries were less than $600, 5 served small populations, but 5 served populations of from 50,000 to 250,000. Again it is difficult to sort out exact correlations, particularly in view of the erratic population changes in California since 1940. Nevertheless, these figures bear careful analysis in the development of criteria for setting salary scales. They also pose the perennial question of whether the best use is currently being made of the professional and administrative skills of the public health officer in a population of 30,000, for example.

Perhaps one more word needs to be said. California is among the more fortunate states in having a comparatively low vacancy rate in its local health officer positions, the fruit, in part, perhaps, of such current studies.

LOCAL HEALTH DEPARTMENT SALARY STUDY

The May *Journal* (p. 714) reported a plan to include a sampling of local health departments in the next study of public health salaries. This study, sponsored by the Association of State and Territorial Health Officers, is already under way. The questionnaires have been prepared and sent out by the Committee on Professional Education; the technical work of analyzing and tabulating the material is being undertaken by the U. S. Public Health Service.

Questionnaires have gone to a ran-

dom sample of 126 jurisdictions in 39 states representing all areas of the country. One-fifth of the jurisdictions are state health districts. The study is limited to health departments serving from 50,000 to 250,000 persons.

LOUISIANA TAKES STOCK OF ITS SALARY SITUATION

In January, 1948, the Louisiana State Health Department made a telegram survey of salaries for 30 classes of positions common to state health agencies. Nearly every state replied to the Louisiana questionnaire; the largest number reporting for any category of workers was 43 for director of public health nursing; 42 reported on the director of public health engineering.

Except for the state health officer, salaries in the upper grades of positions appear to be somewhat higher in Louisiana than the average for all states; in the lower grades of positions, they are distinctly lower. For instance, Louisiana ranks 9th among 23 grades of minimum salaries for director of local health administration in 37 states, and 6th in 27 grades of maximum salaries for this position. For public health physicians at the entrance level it ranks 18 among 21 grades of minimum salaries in 28 states, and 14 among 23 grades of maximum salaries.

This study is available from Dan S. Moore, State Director of Personnel, Louisiana Civil Service Commission, Capitol Annex, Baton Rouge 4, La.

CONVINCING A BOARD OF ESTIMATE

In New York City the district health officers of the Department of Health have organized themselves into a Health Officers Council. This organization is similar to the Conference of Local Health Officers of a number of states.

In April, this Health Officers Council presented a memorandum on salaries to the New York City Board of Estimate. This memorandum pointed out that of 21 health centers covering the 31 health districts of the city, only 13 were administered by health officers qualified according to Civil Service standards; of the 13 only 8 had health department experience. It also pointed out that 8 experienced health officers had left the department in 1947; of 12 carefully selected candidates who received a year's training in a school of public health through federal funds and several months of intensive training in the department, only 5 remained.

The Health Officers Council cites these facts as illustrations of the situation existing with respect to all types of workers in the health department. It believes that the unfavorable salary situation is the basic reason for the failure to maintain department personnel up to strength.

By way of highlighting its argument, the Health Officers Council compares the salaries and the population served of the New York City district health officers with those of 8 neighboring urban areas in New York State and with 10 health jurisdictions in California. This state was chosen because figures were available and because California and New York State are comparable as to per capita wealth.

This memorandum might have suggestions for other areas in their dealings with appropriating bodies. A limited supply of the memorandum is available from the Health Officers Council, 125 Worth St., New York, N. Y.

SANITARY ENGINEERING AND NATIONAL SECURITY

"A Preliminary Report — Sanitary Engineering Aspects of National Security" by the Subcommittee on Sanitary Engineering Aspects of Major Catastrophes of the National Research Council, has now been made available for general study. Prepared for and at the request of the Committee on Sanitary Engineering and Environment of the Division of Medical Sciences of the National Research Council. The Introduction states:

"This report deals with some of the sanitary engineering aspects of major catastrophes primarily as affecting the civilian population. It presents statistical data concerning catastrophes during the last quarter of a century resulting from natural phenomena and man-made causes. It gives emphasis to the special hazards of the future in the light of technological developments in the arts of peace and war and recommends organization of sanitary engineering services to mitigate the effect of future catastrophes and to provide for control and relief measures when they do occur."

"We must make adequate preparations for meeting the emergency sanitary engineering problems associated with natural catastrophes; in addition it is necessary to develop an organization capable of orientation to the contingency of war, while functioning efficiently in times of peace."

The report points out that a well coordinated program of national security to safeguard public health, welfare and our economic potential should include a plan and organization for sanitary engineering activities. The scope of the activities applies particularly to protection and promotion of public health through control measures over the environment in which people live and work. This specialized service and responsibility includes such essential community or regional facilities or services as: water supply, sewerage, control over atmospheric and stream pollution, insect and rodent control, sanitation of food production, processing and distribution, garbage and refuse collection and disposal, sanitation as related to housing, industry, ventilation, swimming and bathing and general community life, and related matters.

Examples of the type of catastrophe in which sanitary and public health engineering play an important role include the general economic prostration which occurred in England during the winter of 1946–1947 due to the unusual snow storms, high winds and floods; the widespread floods which occur in the Missouri and Mississippi River valleys; and the recent Texas City explosion. The committee has classified possible disastrous events into 3 categories: those of natural phenomena such as floods, tidal waves and earthquakes; the man-made accidents which would include explosions, fires, and epidemics; and war hazards, including aerial warfare, atomic bombing, sabotage, and destruction or deterioration of essential civilian facilities.

In the past, the American Red Cross is cited as being the principal disaster relief organization on a national level. According to the report, for the 26 years from July 1, 1920, to June 30, 1946, $105,000,000 were spent by the A. R. C. in giving disaster relief. Statistical data on the major disasters during that period are included in a separate table. Another tabulation to show the seriousness of major disasters in the United States includes 38 instances during the period 1865–1945 in which a total death toll of 29,622 is listed. A summary and classification prepared by the Metropolitan Life Insurance Company showed that 919 catastrophic accidents occurred during the period, 1937–1946, and listed 12,987 deaths. Data on these events are likewise covered in a special table.

Recommendations include:

"Calamities due to natural phenomena or man-made accidents, or those resulting from acts of warfare such as direct enemy attack or sabotage, involve a wide range of sanitary engineering problems. A consideration of these basic factors indicates that planning for prevention and control over major disasters should originate at a high federal level and be worked out in such detail as to reach down to each community in the nation."

Specific recommendations include:

1. Considering the importance of environmental sanitation in disaster relief work and national security, the committee recommends that special provision be made to develop sanitary engineering programs within the national disaster relief and security program and to place responsibility for them in qualified sanitary engineers.

2. The committee recommends that, in all research and development work of the federal government, channels be established through which the point of view of the sanitary engineer may be obtained. This may be done through employment of qualified consultants or the appointment of one or more full-time sanitary engineers on the staff of the agency or agencies concerned. Agencies in particular need of the full-time services of sanitary engineers are:

American Red Cross
Atomic Energy Commission
Central Intelligence Agency
National Security Resources Board

3. The Sanitary Engineering Division of the Public Health Service, by reason of its specially trained staff and established relationship with the sanitary engineering divisions of state, county, and local departments of health, is particularly well qualified to serve as a liaison unit between federal agencies and those of the respective states and their instrumentalities.

4. The committee recommends that a permanent sanitary engineering unit should be organized in the Public Health Service to carry out disaster and national security activities.

Working with the National Security Council, Central Intelligence Agency, National Security Resources Board, the National Military Establishment, the American Red Cross and various other federal, state, and local agencies, this unit would perform such functions as:

a. Coördinate sanitary engineering work between federal, state, and local agencies, with special emphasis on mitigation of hazards to civilians in times of peace or war.

b. Develop plans in consultation with an overall agency, for the organization and mobilization of sanitary engineers, water works operators, and related man power for service in local, regional, or national emergencies.

c. Promote civilian defense and disaster-relief planning, involving sanitary engineering and environmental sanitation, through the chief sanitary engineers of the state departments of health.

d. Develop a system of liaison and intelligence whereby in the location, design, construction, and operation of public facilities the interests of national security are taken into adequate consideration.

e. Alert state and local agencies of such national defense programs as are likely to affect community resources or facilities for which they are responsible.

f. Develop training programs in environmental sanitation for professional and subprofessional people in order to establish a reservoir of trained personnel for service in times of disorder.

Abel Wolman is chairman of the Committee on Sanitary Engineering and Environment. The Subcommittee on Sanitary Engineering Aspects of Major Catastrophes is composed of Arthur E. Gorman, Chairman, Gerald E. Arnold, Anselmo F. Dappert, Victor M. Ehlers, H. H. Gerstein.

The full report appears in the June, 1948, issue of the *Journal of the New England Water Works Association*, George C. Houser, Editor, Boston 8, Mass.

SCHOOLS OF PUBLIC HEALTH ACCREDITED FOR THE M.P.H. AND DR.P.H. DEGREES FOR 1948–1949

On April 30, 1948, the Executive Board of the American Public Health Association received the recommendation of the Committee on Professional Education to accredit ten schools of public health for the Master of Public Health Degree (M.P.H. in the United States; the equivalent degree in Canada

is the Diploma of Public Health or D.P.H.). The Committee on Professional Education also had recommended accreditation of seven schools for the Doctor of Public Health Degree (Dr.P.H.) for the academic year 1948–1949.

The Executive Board voted to accredit these schools all of which had been accredited previously. A reduction of the number of accredited schools from eleven in 1947–1948 to ten in 1948–1949, is due to a withdrawal of Vanderbilt University which, because of economic circumstances, is forced to discontinue the postgraduate public health training program for the present.

Below are listed the schools accredited for 1948–1949, the degrees for which they are accredited, and the names of the directors or deans.

Institutions Accredited by the American Public Health Association To Give the Degree of Master of Public Health (Diploma of Public Health in Canada) and Doctor of Public Health for the Academic Year 1948–1949

California, University of School of Public Health Berkeley 4, Calif.	M.P.H., Dr.P.H.	Edward S. Rogers, M.D., Dean
Columbia University School of Public Health 600 West 168th Street New York 32, N. Y.	M.P.H., Dr.P.H.	Harry S. Mustard, M.D., Director Harold W. Brown, M.D., Acting Director
Harvard University School of Public Health 55 Shattuck Street Boston 15, Mass.	M.P.H., Dr.P.H.	James S. Simmons, M.D., Dean
Johns Hopkins University School of Hygiene and Public Health 615 N. Wolfe Street Baltimore 5, Md.	M.P.H., Dr.P.H.	Ernest L. Stebbins, M.D., Director
Michigan, University of School of Public Health Ann Arbor, Mich.	M.P.H., Dr.P.H.	Henry F. Vaughan, Dr.P.H., Dean
Minnesota, University of School of Public Health Minneapolis 14, Minn.	M.P.H.	Gaylord W. Anderson, M.D., Director
North Carolina, University of School of Public Health Chapel Hill, N. C.	M.P.H., Dr.P.H.	Edward G. McGavran, M.D., Dean
Toronto, University of School of Hygiene Toronto 5, Ontario, Canada	D.P.H.	Robert D. Defries, M.D., Director
Tulane University School of Medicine Department of Public Health New Orleans 13, La.	M.P.H.	M. E. Lapham, M.D., Dean
Yale University School of Medicine Department of Public Health New Haven, Conn.	M.P.H., Dr.P.H.	Prof. Ira V. Hiscock, Chairman

Credit Lines

NEW YORK PLANS NEW PUBLICATIONS

With the advent of Herman Hilleboe, M.D., as Health Commissioner, and Granville W. Larimore, M.D., as Director of Public Health Education, the New York State Health Department has taken a look at its weekly *Health News* and come up with plans for a weekly, a monthly, and a quarterly.

Beginning in June, *Health News* becomes a monthly publication, beamed primarily to professional health workers, and applying the principles of community organization. Its first developmental issue of April gave news about the State Medical Society and a number of voluntary health agencies, as well as an article on local health services. It was liberally illustrated with pictures, which is a part of the plan, and produced with a high grade of paper and typography. A wide distribution is planned for this publication.

The weekly publication will be the *Bulletin*, reproduced by multilith, and will have "house-organ" type of material and current communicable disease and other information of interest to public health workers. It started publication in June. The *Quarterly* will be devoted to scientific articles. Both the *Bulletin* and the *Quarterly* will be distributed to professional public health workers only.

WHAT DOES A HEALTH DEPARTMENT DO?

Perhaps a new way of answering this question has been found by the Lawrence County (Illinois) Medical Society. In a folded flier it lists each staff member of the Lawrence-Wabash bi-county health department and reproduces the exact record of what each did during one day.

The health officer of this bi-county unit serving a population of about 35,000 is Dale E. Scholz, M.D.

THE SAFETY WORLD GETS TOGETHER

In February, 1948, the National Conference on Home Safety, originally organized in January, 1946, was dissolved. At the same time its successor, the Home Safety Conference of the National Safety Conference was born and will assume some of the aims and activities of the former organization. Among the notable achievements of the Conference during the two years of its existence was the publication and wide distribution of "A Man's Castle," an excellent home safety health education tool.

Donald B. Armstrong, M.D., who was Chairman of the Executive Committee of the earlier conference is temporary chairman of the new conference, and chairman of its Steering Committee. The next meeting of the conference will be held in connection with the 36th National Safety Congress in Chicago, October 18–22.

"IT'S IN THE BAG" A NEW FILM

The Texas State Health Department has recently released "It's In the Bag," a motion picture describing the nursing bag technique and an accompanying script. It is intended to arouse interest in high school girls in the public health nursing professions, as an aid in nursing training, as a means of getting certain health information to the public, and acquainting lay and professional groups with public health nursing service.

Details available from Texas State Health Department, Austin 2, Tex.

WORLD HEALTH ORGANIZATION UP TO DATE

The March issue of *International*

Conciliation (Carnegie Endowment for International Peace, 405 West 117 St., New York 17) is devoted to an article on the Program and Accomplishments of the World Health Organization by Professor C.-E. A. Winslow, with an introduction by Brock Chisholm, M.D., Executive Secretary of the Interim Commission, World Health Organization. Professor Winslow's article is a down to earth summary of the various areas in which WHO operates and the machinery which it employs, but in summarizing he makes the reader see also the wide horizons. This should be in the working library of every public health worker and particularly should it be read by the members of the House Rules Committee, that Committee which on March 12 tabled the resolution for United States ratification of the WHO constitution.

INDIANA MEANS IT

The February issue of the *Monthly Bulletin of the Indiana State Board of Health* is devoted primarily to promoting full-time local health services in Indiana. Its opening article on this subject is illustrated with a cartoon of racers entitled "Come On Indiana," and informs its readers that only 5 states ran behind Indiana in the race for complete state coverage with full-time health departments. There are articles by the executives of the Indiana Tuberculosis Association and the Indiana Congress of Parents and Teachers, and excerpts from the paper by George J. Nelbach of the New York State Committee on Tuberculosis and Health given at the Princeton Conference on Local Health Units. Ten counties are listed as the most likely candidates for supporting full-time service. If they should move over, in fact, from candidates to elected status, 50 per cent of Indiana's population would be covered by full-time local health service.

SCHOOL HEALTH IS GOING PLACES IN WISCONSIN

About 3 years ago in Wisconsin a committee became interested in school health services in that state. Under the sponsorship of the departments of health and education a Wisconsin Cooperative School Health Program with the aim of "better health for every child in the state" was set up.

The program has now prepared a series of 10 *Guides for Better School Health*. No. 1 is *The Road to School Health* (see January *Journal*, p. 119), and No. 10 is *Nutrition Education for Boys and Girls*. In between are pamphlets on school water supply, heating and ventilation, lighting maintenance, dental health, tuberculosis health education, school health examinations, health and safety instruction, and nutrition education. All of these bulletins are available on request from the State Department of Public Instruction, Madison.

The program has been under the direction of Warren H. Southworth, Associate Professor of Education of the University of Wisconsin. Many persons and many agencies have coöperated; 5 of the bulletins were published by the State Department of Instruction, 2 of them with funds supplied by the W. K. Kellogg Foundation; 2 by the State Board of Health, and 1 each by the Department of Agriculture and the Wisconsin Anti-tuberculosis Society.

This coöperative program has also had an annual school health conference. The report of the third one, held in October, 1947, is now also available.

MENTAL HEALTH ON THE RADIO

An exciting new series of 13 transcribed dramas on mental health, *The Tenth Man*, was recently released by the National Mental Health Foundation and is now available for sponsorship on local radio outlets or for other educational uses. Designed as tools for local mental

health societies, doctors, social workers, and others who wish to inform the public about psychiatric facts, these 15-minute radio plays dramatize some of the problems of the one man in 10 who needs or will need professional care for a mental or nervous disorder. The series has received commendation and endorsement from the Group for the Advancement of Psychiatry and the United States Public Health Service. Ralph Bellamy, noted actor, appears as narrator throughout the series, and prominent radio actors play supporting roles. For further information write to the National Mental Health Foundation, 1520 Race Street, Philadelphia 2, Pa.

THE IDEA WAS GOOD ANYWAY

The Lorain County (Ohio) Health Department held its 28th annual meeting on March 1. It celebrated, among other things, a $35,000 two year grant from the W. K. Kellogg Foundation to establish a rural field training center for public health personnel.

Worthy of special mention, however, is its attempt to use the occasion to publicize rural health service over a wide area. It invited *Life Magazine* "to go to an annual meeting of a rural health department" giving as background material some of the facts from *Local Health Units for the Nation,* as well as some indication of the critical personnel shortage.

That *Life* did not accept the invitation, makes it no less good an idea. It takes more than one try to land in big time popular magazines.

MAYORS KNOW THE COST OF SLUMS

The United States Conference of Mayors publishes *America Cannot Afford Slums,* a graphic story in pictures and charts of the increasing financial burden and growing social problem of slums. It is designed as an argument for the Taft-Ellendorf-Wagner housing bill. This telling argument for the bill is attractively packaged in a well printed, well illustrated booklet in pleasing colors.

HOUSES ARE HOMES

The Woman's Foundation has just published *Houses for Family Living,* a summary of the ideas discussed at the Rye, N. Y., Conference on Housing for Family Living in November, 1946. The stated purpose of the pamphlet is "an attempt to put between two covers some of the information recently acquired on family living and the home and to think through what it means." This excellent technical production is available from the Woman's Foundation, Inc,. 10 East 40 Street, New York 16, N. Y., 35 cents—less in quantity orders.

It will be remembered that the Woman's Foundation initiated the chain of events that culminated in the National Conference on Family Life held in Washington, D. C., in May, 1948.

STREAM POLLUTION ABATEMENT

The *Annual Report—Interstate Sanitation Commission* for 1947 gives a record of the accomplishments of the tri-state body organized by New York, New Jersey, and Connecticut to control pollution of the greater New York bay area. Willing coöperation on the part of industry and municipalities is reported, although recourse to the legal powers of the Commission was resorted to 13 times in 1947 through issuance of orders on uncoöperative municipalities or industries. An increase in time spent in meeting requests for special services is noted as a result of continued public education. Among special activities followed was a continued participation in studies of the prevalence of marine borers, studies of storm water infiltration and storm-flow by-passing at sewage treatment plants. Results of chemical and bacteriological tests of samples taken from the various sewage

contributors in the area are presented for the years 1945, 1946, and 1947.

INTRODUCING THE TUBERCULOSIS HOSPITAL

Among the problems of a tuberculosis control program is the natural reluctance of the sufferer's family to hospitalize him away from the home and the nameless fear of hospitals that still remains in many areas. With this in mind the New York State Committee on Tuberculosis and Public Health has published, in an attractive illustrated booklet, *Your Sunmount*, subtitled, "Veterans Administration Hospital and How It Serves You."

The booklet is written for the patient and his family and describes the facilities for his cure and rehabilitation. In the process a good deal of tuberculosis health education is included. This description of a veterans' hospital in New York State to increase effective hospitalization of tuberculous veterans might well be copied elsewhere.

NLNE LEAGUE LETTER

Under date of March 5, the first *League Letter* of the National League of Nursing Education appeared. This is one of a series planned by the NLNE Committee of Public Relations to bring "brief, prompt, accurate information to state and local leagues about happenings in nursing education." Available from NLNE, 1790 Broadway, New York 19, N. Y., at 10 centes each.

A closely related publication is the *News Letter* of the Committee on the Structure of National Nursing Organizations, Volume 1, No. 1, which was issued in March. It is to be "published occasionally" and addressed to every member of the 6 national nursing organizations represented on the Committee on Structure numbering over 200,000. Available without charge from Room 201, 1790 Broadway, New York 19, N. Y.

TELLING DOCTORS ABOUT THE NATIONAL HEALTH COUNCIL

The *New England Journal of Medicine* for January 15, 1948, editorializes on the subject of Voluntary Health Agencies and the National Health Council. This outlines the services the National Health Council can give to existing health agencies. It suggests also that the American Medical Association again become a member of the Council.

The editorial is particularly valuable in interpreting for physicians and local medical societies the Council and its activities in developing local health councils. It has been reprinted by and is available in limited quantities from The National Health Council, 1790 Broadway, New York 19.

ANNUAL REPORTS

Twentieth Anniversary Annual Report, Georgia Warm Springs Foundation, is worth a few minutes for many reasons: to remind us of the physical courage and tenacity of the late President, for the information about the Foundation it contains, especially as to its growth in 20 years, and finally for the technical excellence of the pamphlet itself.

A Summary Report, Food Supply Division, The Institute of Inter-American Affairs, 1942–1947. If you want to know some of the long range attacks on bad health in Central and South America by way of soil conservation, better milk production, use of fertilizer, varied garden crops, leaf through this attractice report with its pictures.

Annual Report of the Social Science Research Council, 1946–1947, is the story of one organization's contribution to the knowledge of human relation through research. It deems its first task in research to be planning, that is, "the entire process of developing research personnel, improving techniques, mapping opportunities and needs, designing

projects, assuring the existence of proper materials, encouraging the investment of funds in research, and better the circumstances under which research is conducted."

Donald Young was the Director of the National Research Council during the period of this report. He is now General Director of the Russell Sage Foundation. His successor at the National Research Council is Pendleton Herring, formerly of the Carnegie Corporation of America and Professor of Government at Harvard University.

The offices of the Council are at 230 Park Avenue, New York 17.

WORTH ACQUIRING

Born Thirty Days Too Soon! was prepared by the Maternal and Child Health Division of the Kansas State Board of Health (Topeka) on behalf of the premature baby because he is too tiny to plead his own case. This tells the simple facts about prematurity, the facilities available, and a plea for tax money of eight cents per capita to expand the program, as well as suggestions for setting up a community program. It gives a page of pictures of great men who were premature babies—Winston Churchill, Darwin, Voltaire, and others.

Good News About Diabetes is number 138 in the series of Public Affairs Pamphlets and explains that the life expectancy of the diabetic is constantly increasing if he pays more attention to his health than the average non-diabetic. The author, Herbert Yahraes, also reports on the activities of the American Diabetes Association and the Diabetes Section of the U. S. Public Health Service, and urges increased funds for research, particularly into the why of diabetes. Public Affairs Committee, 22 East 38 St., New York 16, N. Y., Room 204.

The Unexpected Gift is one of a series of science readers for junior high school. This one, in story form, tells about a well balanced diet and how a school lunch program may be developed. Project in Applied Economics, College of Education, University of Florida, Gainesville, 35 cents, or 28 cents in orders of 25 or more.

The Problem of Cerebral Palsy by Meyer A. Perlstein, M.D., with the assistance of William McPeak, social science analyst, has been published by the National Society for Crippled Children and Adults. It is designed as "an aid to the medical profession, for leaders in community organizations, and as a guide to workers in the fields of health and rehabilitation." Included is a description of the problem of the cerebral palsied child, a suggested state program, professional training, research needs, and cerebral palsy as a socio-economic problem. There is a diagrammatic chart of how a model cerebral palsy program operates, and some hypothetical case histories illustrating the mechanics of the cerebral palsy program.

Available from the National Society for Crippled Children and Adults, Inc., 11 S. La Salle Street, Chicago 3, 25 cents.

State Administration of School Health, Physical Education and Recreation is a status study by the U. S. Office of Education. It gives the current legal and administrative provisions in the various states for the development of school programs of health, physical education and recreation. One section is devoted to coöperative arrangements between state departments of health and education.

Available from U. S. Government Printing Office, Washington 25, D. C., 15 cents.

Public Health in Foreign Periodicals

GEORGE ROSEN, M.D., PH.D.

DURING World War II, it was realized that a complete and accurate study of the influence of the war and of war conditions on public health would not become possible until the end of hostilities.[1] When the fighting ceased, public health workers in various countries began to survey the situation. Attention was turned to the problems of infant mortality, tuberculosis, venereal disease, and nutrition, that is, those problems that were found to be most pressing. So far, information has become available only in piecemeal form, relating to individual countries or to specific restricted problems. At the same time, new problems have not been neglected. In illustration of these comments, a number of investigations dealing with European countries have been selected for review.[2]

INFANT MORTALITY IN FRANCE

In France, the natural decrease of population already existing prior to the war was accelerated during the war years. French authors are, therefore, inquiring into the problem of infant mortality. Lesné and Debré point out that infant mortality, which had steadily declined during the years preceding the war, in 1940 showed an abrupt and considerable rise. From a rate of 110 per 1,000 live births in 1914, infant mortality had fallen to 64 in 1939. As a result, however, of conditions arising from the war and the occupation, e.g., the exodus in the summer of 1940, food difficulties, and infections, infant mortality rose to 91 in 1940, dropped to 77 in 1944, and reached 102 in 1945. It should be recalled that this was the severe winter of 1944–1945 when there was great scarcity of food and fuel. In 1946, however, throughout France there was a sharp drop in infant mortality. The rate for France as a whole was 70 per 1,000 live births.

The authors state that about 100,000 infants under 1 year of age die annually in France. The highest infant death rate occurs before the age of 3 months; and approximately one-third of all deaths under 1 year fall under the heading of neonatal mortality. These deaths are due to various pathological conditions, and to biological, social, and economic causes. Lesné and Debré are more concerned about the latter, for it is their contention that attention to the social and economic problems could save for France three-quarters of the infants who die before the age of 1 year.

The problem of breastfeeding is considered at length. Intensification of the campaign for breastfeeding is advocated. This involves education of doctors and midwives, as well as the general public in the value of breastfeeding. Economic assistance and extra rations should be provided for every nursing mother obliged to work. Breast-milk depots should be established in every large town. Ignorance, carelessness, and poor home conditions contribute to a high infant mortality. Alleviation of these conditions requires a combination of the efforts of doctors and social workers, and an improvement in economic conditions. Furthermore, families with young children should have a priority of fuel. Finally, the authors emphasize the necessity for periodic medical supervision during pregnancy, and during the first year of life. Prenatal clinics and infant

consultation centers must constantly carry on a campaign of education with mothers.

MORTALITY AND MORBIDITY IN DENMARK DURING RECENT YEARS

A survey of public health conditions in Denmark during 1946 presents an interesting comparison with conditions preceding and during the war.[4] The general mortality rates recorded in Denmark are lower than those observed before the war. The years 1942 and 1943 were record years, with the mortality rate dropping to a low of 9.6 per 1,000 population. Tuberculosis mortality is a sensitive index of prevailing social and economic conditions, especially the factors of nutrition and work. War, influencing as it does both of these factors, might be expected to result in a significant increase in tuberculosis mortality. Such was not the case in Denmark. The pre-war downward trend of tuberculosis mortality was checked at first, but was later stabilized. At present, the trend is again downward. During the period 1936–1940, the tuberculosis mortality rate was 40 per 100,000, whereas in the period 1941–1945, it dropped to 34 per 100,000. In 1945, the tuberculosis mortality rate was the lowest yet recorded. It is reported that deaths from all forms of tuberculosis, both pulmonary and other, were even less numerous in 1946 than in 1945.

On the other hand, the war exerted an unfavorable influence on the incidence of typhus fever, typhoid fever, dysentery, scabies, syphilis and gonorrhea. The incidence of scabies achieved a record peak in 1945. Venereal diseases spread considerably after the beginning of the war. Syphilis is reported to have been eight times more frequent in 1944 than in 1940. The number of cases of syphilis reported for these two years was 4,053 and 485 respectively. The trend with respect to gonorrhea was similar. From 1940 to 1944 the incidence of the disease is reported to have increased threefold. The peak incidence for gonorrhea was reached in 1945. During the war there was also a rise in the mortality rate from heart disease.

BCG VACCINATION IN SWEDEN AND RUSSIA

Among the problems remaining in the wake of the war, tuberculosis occupies a prominent place. In dealing with this problem many countries are today using BCG vaccination.

The use of the Calmette vaccine in Sweden dates back to 1925 when the first trials were carried out by the oral route.[5] Intradermal introduction of the BCG vaccine was first employed in 1927 at a children's hospital in Gothenburg, and has since been the preferred mode of administration. During the succeeding two decades the number of persons vaccinated has increased progressively. By the beginning of 1947, 500,000 persons had been vaccinated at least once. The progress of this movement has been promoted by the coöperation of governmental organizations and voluntary agencies. The Swedish National Association Against Tuberculosis has played a leading role in these developments.

Russia, too, has made extensive use of BCG.[6] The Soviet Union was one of the first countries to undertake the study of the Calmette vaccine. In 1924, Tarassevich at Kiev received a culture from Calmette's laboratory at Paris. Belonovsky at Leningrad received a second one in 1926. After a period of preliminary studies, the first vaccinations were carried out in 1926 in the Ukraine. In 1928, vaccination was started in Leningrad, and a year later, the operation was extended to cover five large cities (Leningrad, Moscow, Saratov, Kazan, and Rostov on the Don). It was not until 1937, however, that a widespread movement was started. This movement continued even during the war. By 1940, more than two million

infants had been vaccinated. In the majority of cases the oral route has been used for vaccination. A small number of infants have been vaccinated subcutaneously.

HEMORRHAGIC FEVER IN THE CRIMEA

The Russians have also been active in the field of medical parasitology.[7] In the spring and summer of 1944 and 1945, a mysterious hemorrhagic fever prevailed, often with fatal results among farmers and peasants in the Crimea. Investigation by a group of scientists showed that this disease was caused by a virus transmitted by the tick, *Hyalomma marginatum* Koch.

Grobov studied the local fauna in order to establish possible reservoirs of infection. After investigating various rodents, he found that only hares *(Lepus europaeus transsylvanicus)* harbor the larvae and nymphs in large numbers. When the nympths mature in the spring, they bite cattle and human beings, in this way transmitting the disease. The author suggests that birds may also play a role in the transmission of this fever, since nymphs of *H. marginatum* were found on several avian species.

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2. As far as the available foreign literature will permit, it is planned in the near future to deal similarly with South America, Africa and Asia.

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7. Grobov, A. G. On the Question of Carriers of the Crimean Haemorrhagic Fever (K Voprosy o Perenoschikach Krimskoye Gemorrhagicheskoye Lichoradki). *Meditsinskaya parazitologiya i parazitarnyie bolezni,* 15 (6):59–63, 1946.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.

Applied Medical Bacteriology—*By Max S. Marshall, with the collaboration of Janet B. Gunnison, Alfred S. Lazarus, Elizabeth Morrison, and Marian C. Shevky. Philadelphia: Lea and Febiger,* 1947. 340 pp. Price, $4.50.

It is a pleasure to review a book whose title so aptly describes its contents. The authors have succeeded in presenting an amazing amount of information in 340 pages, in a clear, concise, and well organized manner. The method of approach conveys the practical aspects of medical bacteriology as applied to and used by clinicians, public health workers, laboratory workers, nurses, and teachers. An attempt is made to present medical bacteriology in such a way that it will be more understandable to those who come in contact with its many ramifications.

A unique feature of the book is the 160 pages devoted to a discussion of diseases from the viewpoint of etiology, epidemiology, type of specimen for examination, laboratory procedures, and methods of reporting. Excellent judgment is shown in the choice of laboratory procedures, which are clear and up-to-date.

Other chapters deal with specific procedures, such as cultivation, isolation, general techniques as used in bacteriology, the use of laboratory animals and culture media, and general information regarding virology and mycology. An excellent chapter on the collection of specimens and the principles involved adds materially to the value of the book for clinicians and laboratory workers.

The appendix is exceptionally well treated, with clear tables regarding diseases, causative agents, specimens for examination, pertinent animal and serologic tests, stains, reagents, and diagnostic antigens and antisera.

This well organized text, with its abundance of factual information, should be available in every laboratory doing bacteriologic and serologic diagnostic tests. MELVIN E. KOONS

The Pathology of Nutritional Disease—*By Richard H. Follis, Jr., M.D. Springfield, Ill.: Thomas,* 1948. 291 pp. Price, $6.75.

This book fills a real need and both Dr. Follis and the publisher are to be congratulated, the former for getting together in one place the pertinent pathology involved in many nutritional deficiencies, and the latter for doing a good job of printing and reproduction of the pathology plates. The best sections of the book deal with the author's own work on the pathology of scurvy and rickets. The subtitle of the book is "Physiological and morphological changes which result from deficiencies of the essential elements, amino acids, vitamins, and fatty acids." In general, the sections dealing with physiological changes are so brief that one might question whether they should even have been included, but certainly not in the subtitle. The book is well written and reads easily. The author's frequent use of the phrase "of course"—"such changes are, of course, partially explained by the deranged calcium and phosphorous metabolism . . .—arginine is probably one of the precursors of creatine and, of course, acts as a catalyst in the synthesis of urea . . ." tends to over simplify many statements. Everyone in the field of experimental nutrition will enjoy and

thank Dr. Follis for his splendid contribution.

FREDERICK J. STARE

Hearing and Deafness—A Guide for Laymen—*Edited by Hallowell Davis, M.D. New York and Toronto: Murray Hill Books, Inc.*, 1947. 496 pp. Price, $5.00.

According to the Editor, "This book is written for the deaf and the hard of hearing and for their families, their parents, their teachers and their friends. It is written for physicians, for educators, for social workers, and for all who are concerned with the conservation or improvement of remaining hearing; or with the approach to normal living for whose who have suffered either complete or partial hearing loss." Dr. Davis and his thirteen contributors have written an admirable book which should be on the shelves of public health workers whose programs include, or should include, programs of hearing conservation.

Certain sections are too difficult for some readers; however, they are clearly posted in advance so they may be omitted if the reader wishes. For the most part the book is easy to understand. It is interesting and scientifically sound.

Public health workers will find the chapter on testing for hearing especially useful. That on the psychology of the hard of hearing and deaf is illuminating. The chapter on hearing aids has many practical tips for the user of aids. The reader cannot fail to be impressed by the many professional skills, including speech reading, auditory training and vocational guidance that must be utilized to meet the needs of patients adequately, and by the large number of hard of hearing and deaf people in the United States.

The public health administrator will be interested in the chapter on the military program of aural rehabilitation. By analogy he can learn of the organization of services required for many civilian needs. Although organizations for the aurally handicapped are discussed, the administrator will look in vain for a complete discussion of the efforts made in the United States to develop Conservation of Hearing Programs as part of community health programs. An additional chapter summarizing programs such as those stimulated by the Children's Bureau would have made this fine book even better—at least for the health administrator, for whom it was not primarily written.

WILLIAM R. WILLARD

Communicable Disease Control—*By Gaylord W. Anderson, M.D., and Margaret G. Arnstein, R.N. (2nd ed.). New York: Macmillan*, 1948. 450 pp. Price, $5.00.

The seven years that have elapsed since the publication of the first edition of this excellent work on public health have witnessed many important changes in communicable disease control, most of which have been included in this new edition. New antibiotics, sulfonamides, and antigens have come into common use for the prevention and control of many infections, and their application to preventive medicine has been capably described.

As in the previous edition, the first part of the book deals with the control of the communicable diseases in general; the second with the prevention and treatment of particular diseases. A chapter on rheumatic fever has been added. On the whole, an excellent textbook on preventive medicine has been achieved and only a few minor criticisms can be made.

On page xiii the list of tables spread through the text fails to give the page numbers where the tables can be found. Incubation periods mentioned are not all in entire agreement with those usually found in medical texts. For instance, that of mumps is given as 3 weeks instead of the more usually stated 16 to 18 days. In the bibliographies,

although this is a 1948 book, there are very few references to articles appearing in 1947; and for the chapter on poliomyelitis, a subject on which there has been a great deal written in the last two years, there is no 1947 reference and only one for 1946.

This book can be very warmly recommended to doctors and nurses working in the public health field, and pediatricians interested in preventive medicine will also find much of interest and value in a study of this text.

PHILIP M. STIMSON

Public Health Administration in the United States—*By Wilson G. Smillie. (3rd ed.) New York: Macmillan,* 1947. 637 pp. Price, $6.50.

This third edition, published seven years after the second, is divided into four parts.

The first presents an analytical and historical development of the public health movement. The functions of public health are listed by Smillie as Sanitation, Control of Communicable Diseases, Public Health Education, Individual Health Protection, and the Development of a Nation-Wide Program of Adequate Comprehensive Medical Care.

Part two summarizes the many scientific and administrative developments in the control of communicable diseases: particularly streptococcal infections, as a group of diseases; tuberculosis with case finding rules and mass surveys; malaria and chemotherapy; meningococcus meningitis and sulfonamide prophylaxis. Critical evaluation of community immunization procedure is an important contribution. The numerous charts, maps, diagrams, and an extensive bibliography add to the value of the text.

Part three contains a chapter on each of eleven basic activities of a health department. The child health chapter covers the entire gamut of services from maternal hygiene and the EMIC program through school health, with emphasis on dental hygiene.

Part four is the most outstanding of the book. For the student or teacher of public health practice it is a good summary of the federal agencies and the types of administration existing in the states, municipal, and rural areas. It includes a discussion of voluntary agencies and disaster relief. Final chapters span administrative problems from public relations with the medical profession to budgets and personnel training.

An appendix contains personnel qualifications for some of the key positions of the health department.

The text reflects the experiences brought to public health from World War II. It is an excellent text for students of public health, particularly those without experience or a medical background. It is a reference book which each health department should make available to its personnel.

VLADO A. GETTING

A Synopsis of Hygiene—*By G. S. Parkinson, D.P.H., assisted by Kathleen M. Shaw, M.B.E. (9th ed.) London: J. and A. Churchill Ltd.,* 1947. 791 pp. Price, $8.25.

The Jameson and Parkinson textbook on hygiene has been revised faithfully since the first edition appeared in 1920. This ninth edition is the first to indicate the influence on public health practice of the Education Act of 1944, the National Health Service Act and the National Insurance Act of 1946. Further modifications in the text result from changes in British hospitalization policies and from changes in the requirements for the Diploma of Public Health. The reader of this edition is constantly impressed with the impact of social legislation and increasing authorty of the Ministry of Health upon British public health.

The material in this book is a veritable treasury of technical information

on public health and preventive medicine. Organization of material differs considerably from that found in American textbooks. The epidemiologist will find no particular order of presentation of disease control; the industrial hygienist will have to browse through at least four of the nine sections; there is little help for those who are interested in the public health laboratory or in nursing. But public health and hospital administrators, engineers, nutritionists, maternal and child hygienists, and those interested in public health law will find this volume constantly useful as a reference guide. CHARLES E. SHEPARD

A Manual of Medical Parasitology, with Techniques for Laboratory Diagnosis and Notes on Related Animal Parasites—*By C. Courson Zeliff, M.S., Ph.D. State College: Pennsylvania State College,* 1947. 159 pp. Price, $3.75.

This is a paper-bound, lithoprinted volume of typewritten notes, tables, and keys, describing the appearance and morphology of parasites—principally of man—and laboratory methods, direct and indirect, of recognizing various types of parasitic infection. The symptomatology, treatment, and prevention of parasitic disease are scarcely mentioned. A classification of human parasites by phylum, class, order, family, genus, and species is included, and special sections deal with medical protozoölogy, helminthology, arachnology, and entomology. These are illustrated by some 68 figures on 13 plates. None of these are original with the author and many of them are so reduced in size and poorly reproduced as to be worthless; in many instances the captions cannot be read without a reading glass. Numerous tables of differential characteristics and keys for the separation and identification of related forms are presented; the majority of these are reprinted from well known texts on parasitology. The typescript was poorly proof-read and abounds in errors of punctuation, spelling, grammar, and diction. The compilation of notes on laboratory techniques is useful, as it includes very recent observations and developments in this field, but these are not treated critically. References are given throughout the text, in footnotes and at the end of the volume.

JUSTIN M. ANDREWS

American Medical Research, Past and Present—*By Richard H. Shryock, Ph.D., New York: The Commonwealth Fund,* 1947. 350 pp. Price, $2.50.

This monograph, one of the studies prepared under the auspices of the Committee on Medicine and the Changing Order of the New York Academy of Medicine, is a very worthy addition to that series. Dr. Shryock presents an account of the development of American medical research from the middle of the 18th century to the present. Particular emphasis is placed on the developments of the past half century and on their relevance for the present state of medical research.

Beginning with the formative influences that shaped American medical research—British, 1750–1820; French, 1820–1860; German 1860–1895—the author traces the factors that led, around the turn of the century, to the emergence of American medicine on "a level of cultural independence." The multifarious elements that enter into the activity known as research are dealt with judiciously and in proper perspective. Dr. Shryock examines the rôles of institutions (Johns Hopkins Medical School) and of persons (William H. Welch), and appraises the significance of private support and the rise of the great philanthropic foundations for the maturation and growth of medical research.

Within the brief compass of this volume, the author examines such important questions as the relation of research to teaching, academic salaries,

medical publications, trends in medicine, and the impact of the changing social and economic background on private and public agencies in supporting research. Finally, he points out that mere technical advance is not enough. What is needed in addition is an appreciation of the cultural significance of science itself. This can be obtained by means of historical perspective. Toward this end Dr. Shryock's volume is a solid contribution. GEORGE ROSEN

Health Instruction Yearbook, 1947—*Edited by Oliver E. Byrd, M.D. Stanford, Calif: Stanford University Press,* 1947. 325 pp. Price, $3.00.

The 1947 edition of the *Health Instruction Yearbook* will take its place as a welcome companion volume to the *Yearbooks* of preceding years. Because of the increasingly rapid flow of experience in medicine, public health, and allied fields, there is great need for a volume such as this which records in a most convenient form summaries of recent health developments.

As in previous editions of the *Yearbook,* the editor has cast his net wide and has secured information on subjects ranging from the vitamin content of mushrooms to the details of the charter of the World Health Organization. Very little of importance on the health scene of 1947 has been omitted. One feels, however, that certain items might have been deleted. For instance, there seems little reason for the entry about a former postmaster general and his high blood pressure. Nevertheless, this item is indicative of the miscellany of health information to be found in the *Yearbook's* pages.

The editorial labor involved in compiling a book of this sort is exemplified by the editor's prefatory statement in which he says that 1,672 articles and news sources were reviewed. Of this number 323 were culled for inclusion in the 1947 edition. Thus, one can be assured that the text touches on practically every aspect of health that excites interest today. Moreover, the editor's introductory comment to each chapter are as interesting and useful as the factual items treated.

The book is highly commended. As a ready reference source, it is admirably compiled and organized. Every public health library should possess this volume for the *Yearbook* is not only a notable undertaking but an unmixed blessing to those who want to keep abreast of progress in the profession.

JOHN LENTZ

Opiate Addiction—*By Alfred R. Lindesmith. Bloomington, Ind.: Principia Press,* 1947. 235 pp. Price, $3.00.

In this volume, Professor Lindesmith " . . . aimed to develop . . . an interpretation that would . . . cover all instances of drug addiction." His understanding of the physiological and emotional mechanisms of drug addiction is meager, his arguments specious and his proposed "reforms" dangerous to the public health. The book and other writings of Professor Lindesmith represent armchair philosophical rumination on material obtained from "sixty to seventy" addicts about fifteen years ago. He declined, as unnecessary, an opportunity to study several hundreds of addicts before writing the book.

The author's thesis is that habitual users of narcotic drugs do not become addicts until after they have experienced withdrawal distress, known its nature, experienced relief of withdrawal symptoms by readministration of the drug, and have learned the name of the drug. This explanation will not satisfy most students of drug addiction. In the first place, it does not explain why the habitual user or "future addict" takes the drug often and regularly enough to become physically dependent on it, nor does it explain animal addiction. In the

second place, Professor Lindesmith does not understand that addiction and readdiction depend upon personality characteristics and emotional needs; he does not recognize the "addiction-prone" individual repeatedly described by Kolb and others. Most readers will be astonished at the naivete with which the author, without knowledge or regard for psychiatric concepts, has the temerity to discuss dynamics of drug addiction.

In spite of known weaknesses of "police" control of narcotic addiction in the United States, which the author proposes to abolish, the fact remains that since the Narcotic Act was passed in 1915 there has been a substantial decline in the number of addicts in this country, although the author leaves one in doubt as to whether he believes a decrease in drug addiction is really desirable.

Professor Lindesmith approves federal hospitals for treatment of drug addiction for those who wish to go voluntarily, but fails to realize, or thinks it immaterial, that only a very few would choose treatment if drugs were freely available on prescription, as he recommends. He believes the common rationalization of addicts, that drugs make them more efficient. The truth is that addicts who have the quantity of drug they desire become inefficient, lazy, somnolent, and careless of person. Professor Lindesmith mentions as an advantage of this free prescription that contraband drug traffic would be wiped out, and the addicts would be able to get their required drugs at a reasonable price, as if that were desirable. Public clinics and free prescription of drugs for addicts have been tried several times with disastrous results; addicts deceive the physicians and get extra drugs which they peddle in contraband channels, or give to their friends, who then become eligible for dispensation of drugs and a vicious spread of addiction is thus established.

Proposal for unrestricted prescription of narcotics for addicts is naive in the extreme and dangerous to the public health of the nation. Fortunately, sounder judgment than the author's will prevail and there is no likelihood of the "reforms" which he proposes being carried out.

VICTOR H. VOGEL

Symposium on Medicolegal Problems. Under the Co-sponsorship of the Institute of Medicine of Chicago and the Chicago Bar Association—*Edited by Samuel A. Levinson, M.D., Ph.D. Philadelphia: Lippincott,* 1948. 255 pp. Price, $5.00.

On those rare occasions when doctors and lawyers get together to discuss mutual problems both groups invariably learn something. At six notable meetings of this sort the members of these two professions in Chicago gathered to listen to papers and to ask questions about: (1) the medical witness; (2) artificial human insemination; (3) the practice of pathology; (4) operations for sterility; (5) trauma and cancer; and (6) blood tests for paternity and chemical tests for intoxication. These vexing problems were clarified and explained, if not exactly solved, by speakers representing the medical and legal points of view, supplemented by discussion from the floor, which is fully reported and sometimes is more brilliant than the original paper. Although based mainly on Illinois experience, the material is of general interest and value, and might well set a pattern for similar assemblies in other states or in the larger cities. This well printed book will appeal to those who are concerned with the six special medicolegal problems which are so ably discussed in it.

JAMES A. TOBEY

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

In Battle Array—What the National Cancer Institute will do with the fourteen millions entrusted to it should prove an effective antidote against despair. It's assuring just to read of the magnitude and the scope of the work, being done without fanfare, fireworks, or benefit of radio comedians.

ANON. The Program of the National Cancer Institute. Pub. Health Rep. 63, 16:501 (Apr. 16), 1948.

From the Experts—Though a half million syphilitics have been treated with penicillin, and though that drug is now the principal agent employed, treatment is not yet entirely standardized. This report is the last word in that direction.

ANON. The Status of Penicillin in the Treatment of Syphilis. J.A.M.A. 136, 13:873 (Mar. 27), 1948.

"Theirs Not to Reason Why"—Having proved himself to be an effective delinquent case chaser-upper the put-upon Western Union messenger was sent out to bring in reported venereal disease contacts. Of the 1,500 he called upon, 47 per cent reported within 3 days, a better response than health board visitors procured.

BAUER, T. J., *et al.* The Telegram as a Case-Finding Technic in Venereal Disease Control. Ven. Dis. Inform. 29, 2:42 (Feb.), 1948.

Human Souls, Not Cases—This is an effective plea for more and better social work in connection with the detection and care of the quarter million tuberculosis patients we have on our national hands.

BLOOM, S. Some Economic and Emotional Problems of the Tuberculosis Patient and His Family. Pub. Health Rep. 63, 14:448 (Apr. 2), 1948.

One in Six Gets It—It's time we did something more about trichinosis, this distinguished committee says. It recommends excluding from New York pork from hogs fed uncooked garbage, prohibiting shipment of uncooked garbage from town, and its feeding in-town, among other measures.

CORWIN, E. H. L., and STICE, L. Control of Trichinosis (Committee Report) Pub. Health Rep. 63, 15:478 (Apr. 9), 1948.

Incidental Intelligence — Reported cases of polio were fewer in 1947 than any year since 1942. Epidemics occurred in only small areas. England and some of the continental countries were hard hit.

DAUER, C. C. Incidence of Poliomyelitis in 1947, (and) BRADLEY, W. H., and GALE, A. H. Poliomyelitis in England and Wales in 1947. Pub. Health Rep. 63, 13:393 (Mar. 26), 1948.

Science Marches On—Don't let the word "therapy" in the title persuade you that this paper is for practising physicians only. It is for every professional worker who wants to know what's back of the rule-of-thumb nutritional precepts he preaches to others, or neglects to apply to himself. Not to be missed!

ELVEHJEM, C. A. Recent Progress in Nutrition and Its Relation to Drug Therapy. J.A.M.A. 136, 14:915 (Apr. 3), 1948.

Canners, Take a Bow!—From a year-long nation-wide survey of canned, frozen, and fresh fruit and vegetables comes the conclusion that canned foods cost least and offered the best nutri-

tional values from an economic standpoint.

KREHL, W. A., and COWGILL, G. R. Comparative Cost and Availability of Canned, Glassed, Frozen, and Fresh Fruits and Vegetables. J. Am. Dietet. A. 24, 4:304 (Apr.), 1948.

They're Still at Large—Note for your book: penicillin applied locally cleared up diphtheria carriers.

LEVY, A. J. Local Treatment of Carriers of Virulent Diphtheria with Penicillin. J.A.M.A. 136, 13:855 (Mar. 27), 1948.

Facts About Food—Promised as the first of a series of papers on nutrition (to be published later in book form), this one is full of facts about cereals, legumes, vegetables, and fruit. I can't remember ever reading an article with more facts heaped up, pressed down, and pounded in, than this one.

MAYNARD, L. A., and NELSON, W. L. Foods of Plant Origin. J.A.M.A. 136, 16:1043 (Apr. 17), 1948.

As Our Population Ages—First of a series of statistical papers on heart disease morbidity and mortality, this one presents two graphs you should find useful, the percentage of population in age groups and percentage of deaths in these groups. A more dramatic presentation of the fact that our saving of lives has been in childhood and early adult ages would be difficult to conceive.

MORIYAMA, I. M., and GOVER, M. Statistical Studies of Heart Disease. Pub. Health Rep. 63, 17:537 (Apr. 23), 1948.

Anent Healing Thyself—How are you? Do you bite your nails, drink too much, take barbiturates? Does your anger or fit of tension persist beyond natural limits? Do you enjoy ill-health? You may still not be beyond gaining a better insight into your own condition by reading this dissertation on psychosomatic medicine, which, the writer points out, is akin to preventive medicine in many ways.

RUESCH, J., and BOWMAN, K. M. Personality and Chronic Illness. J.A.M.A. 136, 13:851 (Mar. 27), 1948.

1948 Complications — Ping-pong syphilis is a new descriptive for your vocabulary. The infection is batted back and forth from the infectious partner to the one who has just completed treatment. Under penicillin therapy the situation is not rare. Ways to stop it are discussed.

SCHAMBERG, I. L., and STEIGER, H. P. Syphilitic Relapse vs. Reinfection. Ven. Dis. Inform. 29, 4:92 (Apr.), 1948.

State Paper—Preventive geriatrics, mental health, and research seem to be uppermost in the mind of the new Surgeon General as he takes command of the U.S.P.H.S. You'll want not to miss this address.

SCHEELE, L. A. The Road Ahead in Public Health. Pub. Health Rep. 63, 15:472 (Apr. 9), 1948.

You'll Be Surprised—As part of their course of training these students were required to go out and start a group along the road to better health. Some of the unusual enterprises the youngsters thought up are briefly described.

STEINHAUS, A. H. Adventures in Health Education. J. School Health, 18, 4:103 (Apr.), 1948.

DeLuxe Model—This is about an agreement worked out between the executive officers of the Rochester (Minn.) Public Schools and the Public Health Department, to provide complete school health services by a staff of 25 qualified physicians, nurses, and educators —for 5,000 children.

THOMAS, M. J. Unifying Health Services Through Public Education. Pub. Health Nurs. 40, 4:168 (Apr.), 1948.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ASEPTIC TREATMENT OF WOUNDS. Carl W. Walter, A.B., M.D. New York: Macmillan, 1948. 372 pp. Price, $9.00.

BIOLOGY AND HUMAN AFFAIRS (new ed.). John W. Ritchie. New York: World Book Company, 1948. 818 pp. Price, $3.40.

CARDIOVASCULAR SYPHILIS. New York: Social Hygiene Committee-N. Y. Tuberculosis and Health Association, 1948. Reprinted from Vol. IV., No. 2, February, 1948. pp. 248–278. American Journal of Medicine.

CARE AND MANAGEMENT OF LABORATORY ANIMALS. Edited by Alstair N. Worden, M.A.B.Sc. Baltimore: Williams & Wilkins, 1947. 368 pp. Price, $8.50.

DENTAL HEALTH TEACHING OUTLINE. Nos. I, II, III, IV. No. I for Grades 1, 2, and 3. No. II for 4, 5, and 6. No. III for 7, 8, and 9. No. IV for 10, 11, and 12. Vern D. Irwin, D.D.S., M.P.H., and Netta W. Wilson, M.A. St. Paul, Minn.; Bruce Publishing Co., 1948. Price, $1.00 for 4.

DETOXICATION MECHANISMS. R. Tecwyn Williams, Ph.D., D.Sc. New York: Wiley, 1947. 288 pp. Price, $5.50.

ESSENTIALS OF NURSING. Helen Young, R.N., Eleanor Lee, A.B., R.N., and Associates. New York: Putnam's, 1948. 556 pp. Price, $3.75.

GLOMERULAR NEPHRITIS: DIAGNOSIS AND TREATMENT. Thomas Addis, M.D. New York: Macmillan, 1948. 338 pp. Price, $8.00.

HEALTH IN SCHOOLS. TWENTIETH YEARBOOK. Washington: American Association of School Administrators, 1948. 400 pp. Price, $1.50.

HEALTH IN YOUR DAILY LIVING. Josephine L. Rathbone, Francis L. Bacon, and Charles H. Keene, M.D. Boston: Houghton Mifflin, 1948. 442 pp. Price, $2.60.

INTERESTING AND USEFUL MEDICAL STATISTICS. Edited by William H. Kupper, M.D. Dubuque, Iowa: William C. Brown, 1948. 528 pp. Price, $6.50.

MEDICINE IN THE POST WAR WORLD—THE MARCH ON MEDICINE, 1947. Number XII of the New York Academy of Medicine Lectures to the Laity. New York: Columbia University Press, 1948. 109 pp. Price, $2.00.

MOTIVATION IN HEALTH EDUCATION. The 1947 Health Education Conference of the New York Academy of Medicine. New York: Columbia University Press, 1948. 53 pp. Price, $1.00.

NOAH WEBSTER: LETTERS ON YELLOW FEVER ADDRESSED TO DR. WILLIAM CURRIE. Supplements to the Bulletin of the History of Medicine. No. 9. Introductory Essay by Benjamin Spector. Baltimore: Johns Hopkins Press, 1947. 110 pp. Price, $2.00.

ORAL VACCINES AND IMMUNIZATION BY OTHER UNUSUAL ROUTES. David Thomson, D.P.H., Robert Thomson, M.B., Ch.B., Assisted by James Todd Morrison, M.D., D.P.H. Published for the Pickett-Thomson Research Laboratory. Edinburgh, Scotland: E. S. Livingstone, 1948. 329 pp.

PHYSIOLOGIC THERAPY IN RESPIRATORY DISEASES. (2nd ed.). Alvan L. Barach, M.D. Philadelphia: Lippincott, 1948. 408 pp. 74 Illus. Price, $9.00.

PHYSIOLOGY OF EXERCISE. Laurence E. Morehouse, Ph.D., and Augustus T. Miller, Jr., Ph.D. St. Louis: Mosby, 1948. 353 pp. Price, $4.75.

PLANNING THE NEIGHBORHOOD. American Public Health Association, Committee on the Hygiene of Housing. Chicago: Public Administration Service, 1948. 90 pp. Price, $2.50.

PRACTICAL FOOD INSPECTION. Vol. II. FISH, POULTRY AND OTHER FOODS. C. R. A. Martin, M.R., San. I. London: H. K. Lewis, 1948. 284 pp. Price, 18s. net.

PROBLEMS OF HOSPITAL ADMINISTRATION. A Report of a Study Based upon Interviews with 100 Hospital Administrators Located in Various Sections of the United States. Charles E. Prall, Director. Chicago: Physicians' Record, 1948. 106 pp.

RECENT PROGRESS IN HORMONE RESEARCH. Vol. II. The Proceedings of the Laurentian Hormone Conference. Edited by Gregory Pincus. New York: Academic Press, 1948. 427 pp. Price, $8.00.

RECLAIMING USED GAUZE SPONGES. Dewey H. Palmer. New York: Hospital Bureau of Standards and Supplies. 7 pp. Price, $.50

RHEOLOGY IN RELATION TO PHARMACY AND MEDICINE. G. W. Scott Blair, M.A., D.Sc. London: The Pharmaceutical Press, 1947. 20 pp. 2s.

SOCIETY AS THE PATIENT. Lawrence K. Frank. New Brunswick, N. J.: Rutgers Uni-

versity Press, 1948. 395 pp. Price, $5.00.

SYNOPSIS OF PEDIATRICS. (5th ed.). John Zahorsky, A.B., M.D., F.A.C.P. Assisted by T. S. Zahorsky, B.S., M.D. St. Louis: Mosby, 1948. 449 pp. Price, $5.50.

TAKING THE CURE. Robert G. Lovell, M.D. New York: Macmillan, 1948. 93 pp. Price, $2.00.

THERAPEUTIC AND INDUSTRIAL USES OF MUSIC. Doris Soibelman. New York: Columbia University Press, 1948. 374 pp. Price, $3.00.

TO YOUR HEALTH AND EMOTIONS LADY! Margaret W. Metcalf. New York: Woman's Press, 1948. 40 pp. Price, $.50.

TRENDS IN SOCIAL WORK. As Reflected in the Proceedings of the National Conference of Social Work 1874–1946. Frank J. Bruno. New York: Columbia University Press, 1948. 387 pp. Price, $4.50.

TUBERCULOSIS REFERENCE STATISTICAL YEARBOOK 1946. New York: N. Y. Tuberculosis and Health Association, 1947.

USE OF AIRCRAFT IN THE CONTROL OF MOSQUITOES. Sponsored by the American Mosquito Control Association. T. D. Mulhern, Secy-Treas. New Brunswick, N. J. American Mosquito Control Asso., Bull. No. 1, 1948. 46 pp. Price, $1.50.

WATER PURIFICATION CONTROL. (3rd. ed.). Edward S. Hopkins. Baltimore: Williams & Wilkins, 1948. 289 pp. Price, $4.00.

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AMERICAN NATIONAL RED CROSS, THE. Annual Report for the Year Ending June 1947. Washington, D. C.: The American National Red Cross. 201 pp.

CHARLES V. CHAPIN HOSPITAL. 38th Annual Report for the Year Ending September, 1947. Providence, R. I. Oxford Press, 1948. 88 pp.

EDMONTON, CITY OF. Report of the Local Board of Health 1947. Alberta, Canada, 1947. 23 pp.

FEDERAL SECURITY AGENCY. Annual Report 1947. U. S. Office of Education. Washington, D. C. Supt. of Documents, U. S. Gov. Ptg. Office, 1948. 248 pp. Price, $.20.

INSTITUTE OF INTERNATIONAL EDUCATION. 28th Annual Report of the Director. New York: Institute of International Education. 115 pp.

MASSILLON, CITY OF. Health Report 1947. Wm. B. Wild, M.D., Health Commissioner. Ohio: Massillon Health Department. 64 pp.

METROPOLITAN HEALTH COUNCIL OF COLUMBUS AND FRANKLIN COUNTY. Annual Report Year Ending February 1948. Columbus, Ohio: Metropolitan Health Council, Council of Social Agencies, 1948. 11 pp.

MORBIDITY AND MORTALITY REPORT 1946. Welby W. Bigelow, M.D., Acting State Health Commissioner. Salt Lake City, Utah: State Department of Health. 42 pp.

NEW BRUNSWICK DEPARTMENT OF HEALTH. 30th Annual Report of the Chief Medical Officer to the Minister of Health and Social Services. 1947. New Brunswick, Canada: Department of Health, 1948. 140 pp.

ROCKEFELLER FOUNDATION, THE. A Review for 1947. Raymond B. Fosdick. New York: The Rockefeller Foundation. 64 pp.

TUBERCULOSIS IN THE BRITISH ZONE OF GERMANY. With a Section on Berlin. Report of an Inquiry made in September–October, 1947. M. Daniels, M.D., D.P.H., and P. D'Arcy Hart, M.D. London: His Majesty's Stationery Office, 1948. 32 pp. Price, sixpence.

WEST VIRGINIA MERIT SYSTEM COUNCIL. 5th Report. January 1, 1946 to June 30, 1947. Charleston, W. Va. Office of the Supervisor. 26 pp.

ASSOCIATION NEWS

SEVENTY-SIXTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
BOSTON, MASS., NOVEMBER 8–12, 1948

FELLOWSHIP IN THE AMERICAN PUBLIC HEALTH ASSOCIATION

The grade of Fellowship was established in the American Public Health Association in 1922. Professional workers in public health are eligible for election as Fellows under certain conditions and as an indication that they have achieved a recognized professional standing. As of January 1, 1948, the total membership of the Association was 11,124, including 1,913 Fellows, or 17 per cent of the total.

Questions are frequently asked regarding the requirements for Fellowship and the following statement outlines the provisions of the By-laws governing qualification and election.

Persons who have been members of the Association for at least two years and who have reached their 30th birthday are eligible to apply if, in their opinion, they meet the conditions of one or more of the six clauses in the By-laws defining "an established professional standing." These six possible approaches are as follows:

a. A person who has rendered acceptable service for two or more years in a responsible public health position and who has been awarded in course a degree of Doctor of Public Health, Doctor of Science in Public Health, Doctor of Philosophy in Public Health, Doctor of Medicince with at least one year of graduate study in public health in a University, Master of Public Health, Diploma in Public Health, or other equivalent degrees, according to standards approved by the Executive Board of the American Public Health Association.

b. A person who has been awarded in course an academic or professional degree involving training in public health and who has been regularly engaged in health work for at least five years, having rendered meritorious service as a health officer or in responsible charge of work in either a public or private health agency.

c. A person who has done notable original work in public health or preventive medicine of a character to give him a recognized standing.

d. A person regularly engaged in health work for at least five years, who has given evidence of special proficiency, who has attained a recognized standing.

e. A teacher of public health or one of its constituent sciences who has attained distinction as an expounder of the principles of public health or its constituent sciences. Such a teacher shall have had at least five years' experience as a teacher of public health subjects. Any years of experience as defined in paragraphs "b" and "d" that the applicant may have had shall be considered the equivalent of the same number of years' experience as a "teacher."

f. A person not covered by the above, who has made substantial contributions to public health work in his chosen branch, who has attained a recognized professional standing.

Persons wishing to apply should request a Fellowship application blank from the American Public Health Association Membership Department, 1790 Broadway, New York 19, N. Y. Appli-

cations are accepted up to August 1 each year for consideration by the Governing Council at the fall meeting. It is important to make clear that members themselves should take the initiative in submitting such applications. Neither the Sections nor the A.P.H.A. administrative staff are authorized to solicit applications. This means that, although nearly 3,000 persons have been duly recognized with this grade of affiliation since 1922, there are other persons well qualified who have never initiated the process of applying for Fellowship. It should be clear that members should not await action by others if they wish to attain Fellowship. It is necessary and proper for them to take the first step.

An application for Fellowship requires sponsorship by two Fellows of the Section with which the applicant desires to be affiliated. These personal signatures are to be obtained by the applicant before submitting the completed application. The A.P.H.A. office will assist, on request, in determining the Section with which prospective sponsors are affiliated. Applications from persons not wishing to be identified with a particular Section and requesting unaffiliated Fellowship may be sponsored by any two Fellows of the Association.

When properly sponsored and otherwise completed, the application is sent to the A.P.H.A. office, after which the list of persons applying is published in the *American Journal of Public Health*, usually in the September issue, but in any case not less than 15 days before the date for the Annual Meeting. An established routine is followed for review by the Section Councils (unaffiliated applications are reviewed by the Executive Board) and by the Committee on Eligibility. This Standing Committee of the Association is made up of one Fellow from each of the 12 Sections, plus a Chairman elected by the Executive Board. This group is under instructions from the Governing Council to examine each application in accordance with the provisions of the clause of the By-laws chosen by the applicant, and to apply the criteria with precision in each case. Final election is by the Governing Council at the second meeting at each annual session.

The privileges of Fellowship include eligibility to serve as an officer of the Association or one of the Sections, Chairman of an Association or Section Committee (over one hundred in number), a member of one of the four Standing Committees, a member of the Governing Council or Executive Board, and the right to vote at the Annual Meeting for the elective members of the Governing Council and on amendments to the Constitution. Some Civil Service and merit system records depend upon Fellowship in the American Public Health Association as an achievement deserving recognition in applicants.

The dues of Fellows are $12.00 annually, and include a subscription to the *American Journal of Public Health* and other services to which members are eligible. Life Membership is available at $200, covering all future annual dues.

Applications for Fellowship to be considered at the 76th Annual Meeting in Boston, Mass., November 9–12, 1948, should be filed with the Association as soon as they are completed, and in any case not later than August 1. For further information, address the Membership Department, American Public Health Association.

A.P.H.A. membership application blank on page XXXIII

THE 76TH ANNUAL MEETING
Boston, Mass., November 8–12, 1948
Hotel Reservation Form

The hotels listed below have rooms available for Association delegates at the rates indicated. Please note that NO RESERVATIONS WILL BE ACCEPTED DIRECTLY BY HOTELS. Make your reservation through:

The Convention Bureau, Boston Chamber of Commerce, 80 Federal Street, Boston 10, Mass.

Hotels	*Singles*	*Doubles*	*Twin Beds*	*Suites*
Bellevue	$4.00–$6.00	$6.00–$8.00	$7.25–$10.00	$12.00–$15.00
Bostonian	3.00– 4.50	5.00– 6.50	5.00– 7.00	8.00– 10.00
Bradford	4.00– 6.00	6.00– 7.00	6.50– 8.00	12.00– 14.00
Braemore	4.40– 6.60	6.40– 9.90	6.60– 9.90•	9.90– 25.00
Continental	3.50– 4.00	6.60	7.00	8.00– 25.00
Copley Plaza	4.50– 6.60	7.75– 8.80	8.80– 10.00	15.00– 25.00
Copley Square	4.00– 5.00	6.00	7.00	10.00– 14.00
Gardner	2.50– 5.00	4.00– 6.00	4.00– 6.00	7.50
Hemenway	3.00– 3.85	4.40– 5.50	4.40– 5.50	None
Kenmore	4.00– 6.00	6.50– 8.50	6.50– 8.50	10.00– 12.50
Lenox	3.75– 5.00	5.50– 6.50	7.50	10.00– 16.00
Manger	3.85– 5.50	5.00– 7.50	5.50– 7.50	None
Minerva	3.00– 5.00	4.00– 6.00	5.00– 7.00	5.00– 8.00
Myles Standish	3.85– 6.50	5.50– 7.50	6.50– 7.50	6.50– 15.00
Parker House	4.00– 6.50	6.25– 8.50	7.50– 10.00	14.00– 16.00
Puritan	4.40– 6.60	6.60– 8.80	9.90	13.20– 17.60
Sheraton	4.00– 4.50	7.00– 8.00	7.00– 8.00	7.00– 16.00
Somerset	5.00– 9.00	7.00–11.00	7.00– 11.00	10.00– 20.00
Statler	4.00– 9.50	6.50–12.00	8.50– 14.00	17.50– 27.00
Touraine	4.00– 6.00	6.00– 9.00	7.50– 9.00	14.00– 16.00
Vendome	3.75– 7.00	5.50– 8.75	6.50– 8.75	10.00– 15.00

MAKE ROOM RESERVATIONS EARLY

APPLICATION FOR HOTEL ACCOMMODATIONS
AMERICAN PUBLIC HEALTH ASSOCIATION

76th Annual Meeting and Meetings of Related Organizations, Boston, November 8–12, 1948

(Note that the Meeting opens Monday, November 8, at 9.30 A.M.)

Please make hotel reservation as indicated below:
Give three choices of hotels.

Hotel ..... 1st Choice; Hotel ..... 2nd Choice; Hotel ..... 3rd Choice

.... Room with Double Bed at $..... per day for .... persons
.... Room with Twin Beds at $..... per day for .... persons
.... Room for three people at $..... per day for .... persons
.... Single room at $..... per day
.... Suite at $..... per day for .... persons

ARRIVING. NOVEMBER .... Hour ..... LEAVING: NOVEMBER .... Hour .....

Please print (or type) names and addresses of all occupants including persons making reservation.

NAME STREET ADDRESS CITY STATE

.....
.....
.....

Name .....
Street Address .....
City ..... State .....

MAIL TO: The Convention Bureau, Boston Chamber of Commerce, 80 Federal St., Boston, Mass.

RESERVATIONS WILL BE HELD UNTIL 6:00 P.M. ONLY, UNLESS THE HOTEL IS NOTIFIED OF LATE ARRIVALS

APPRECIATION OF DR. CARL E. BUCK BY THE C.A.P.

At its meeting in New York in March the Executive Committee of the Committee on Administrative Practice adopted the following resolution with respect to Dr. Carl E. Buck who resigned his position as Field Director of the Association in February to become Resident Lecturer in Public Health at the University of Michigan School of Public Health:

BE IT RESOLVED that we, the members of the Executive Committee, for ourselves and for all the members of the Committee on Administrative Practice, express herewith our deep regret that Dr. Carl E. Buck, Field Director, has found it necessary to resign from this important position after seventeen years of continuous service.

Since his appointment in 1931 he has completed surveys of 17 states, the Territory of Alaska, and the Province of Manitoba. His studies have included 36 local communities—cities and counties—and follow-up consultant and advisory visits to the number of 64 in states where studies had been made.

This formidable list of detailed inquiry and recommendation for the administration of state and local health departments does not include a multitude of services to states, cities, and counties in connection with the Evaluation Project or his participation at conferences, institutes, and national, state, and local public health meetings.

His loyalty to the professional objectives and standards of the American Public Health Association, his critical and constructive analyses of official and voluntary health services, and his persuasive and courageous expressions of sound opinion for the betterment of these, often in the face of political, popular, or press criticism, have marked his labors with high quality and consistency.

Dr. Buck's personal and professional contributions to the work he undertook have left a permanent mark upon the purpose and pattern of public health service in the United States and Canada.

The committee wishes him many years of further productive contribution to the teaching of the principles of public health administration in the friendly and coöperative atmosphere of an academic environment.

COMMITTEE ON ADMINISTRATIVE PRACTICES OF THE INDUSTRIAL HYGIENE SECTION

Omitted inadvertently from the Committee List published in the *Year Book* was the following committee of the Industrial Hygiene Section:

COMMITTEE ON ADMINISTRATIVE PRACTICES

J. G. Townsend, M.D., *Chairman,* Industrial Hygiene Division, U. S. Public Health Service, Washington 25, D. C.
W. E. Frederick, Ph.D.
J. M. MacDonald, M.D.
V. A. Nasatir, M.D.
M. F. Trice, B.S.
Miss J. Y. Ziano

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

J. R. Brandon, M.D., City Health Dept., High Point, N. C., City Health Officer

Arthur F. Chaisson, M.D., C.M., Provincial Dept. of Health, Fredericton, N. B., Canada, District Medical Health Officer

Gerald R. Clark, M.D., 411 Capitol Bldg., Phoenix, Ariz., Senior Asst. Surgeon, U.S.P.H.S., Director of Tuberculosis Control, State Health Dept.

Catherine E. Coleman, M.D., Clay County Health Dept., West Point, Miss., Health Officer

William E. Gregson, M.D., M.P.H., Sick Mari-

ners' Clinic, Immigration Bldg., Vancouver B. C., Canada, Quarantine Officer in Charge

Vane M. Hoge, M.D., U. S. Public Health Service, Washington, D. C., Medical Director and Chief, Division of Hospital Facilities

Philip A. Klieger, M.D., Cass Lake Indian Hospital, Cass Lake, Minn., Senior Physician, U. S. Indian Service

Adolph G. Liedloff, M.D., 222 South Front St., Mankato, Minn., Acting Director, District No. 2, State Dept. of Health

E. E. McClellan, M.D., Kaparoulis Bldg., Williamson, W. Va., Mingo County Health Officer

Ruth McDougall, M.D., D.P.H., Red River Health Unit, Ste. Anne des Chenes, Man., Canada, Medical Director

Alejandro Guevara-Rojas, M.D., M.P.H., Martires de Tacubaya 70, Mexico, D. F., Mexico, Director, Unidad de Salubridad y Estacion de Adiestramiento de Xochimilco

John W. Spies, M.D., M.P.H., State Board of Health, Marshallton, Dela., Director, Divisions of Cancer Control and Communicable Diseases, State Board of Health

Leroy K. Young, M.D., U. S. Public Health Service, Manila, Philippines, Consultant on Tuberculosis to Philippine Public Health Rehabilitation Program and Chief, Tuberculosis Control Division, U.S.P.H.S.

Laboratory Section

Rena L. Dodd, 1026 New Scotland Road, Slingerlands, N. Y., Bacteriologist, State Dept. of Health

E. H. Garrard, M.S., Dept. of Bact., Ontario Agricultural College, Guelph, Ont., Canada, Professor and Head, Dept. of Bacteriology

Roderick D. Hamblin, 3086 Stoddard Ave., San Bernardino, Calif., Laboratory Director, San Bernardino County Public Health Laboratory

Dorothy Lewis, Richards Chemical Works, 190 Warren St., Jersey City 2, N. J., Research Bacteriologist and Laboratory Supervisor

Irving J. Lipovsky, M.S., Biology Dept., Univ. of Massachusetts, Fort Devens, Mass., Asso. Professor of Bacteriology

Denys R. Lock, M.A., 1709-21st St., Everett, Wash., Director of Laboratory, Providence Hospital

Frank R. Martuccio, 1422½ Barry Ave., West Los Angeles, Calif., Bacteriologist, U. S. Veterans' Center

Celia Rubin, 2839 India St., San Diego, Calif., Senior Laboratory Technician, City Public Health Laboratory

Helen R. Seraichekas, 19 Barrett St., Cranston, R. I., Medical Technician, U. S. Veterans' Administration

Kenneth E. Shull, 762 Lancaster Ave., Bryn Mawr, Pa., Chief Chemist and Superintendent of Purification, Philadelphia Suburban Water Co.

Kenneth W. Stewart, 1217 Harrison, Kansas City, Mo., Production and Quality Control, Franklin Ice Cream Co.

Vital Statistics Section

Vira Anderson, R.N., Salem Memorial Hospital, Salem, Ore., Medical Record Librarian

Stephen S. Henkin, 555 Prospect Place, Brooklyn 16, N. Y., Chief Record Librarian, Jewish Hospital of Brooklyn

Judith Killeen, 6300 Beacon Ave., Seattle 8, Wash., Advisory Field Clerk, State Dept. of Health

Virginia M. Riley, Barre City Hospital, Barre, Vt., Chief Record Librarian

Henry S. Robinson, 23 Grove St., New York 14, N. Y., Field Statistician, American Cancer Society

Martha C. Wood, 237 Pontotoc, Houston, Miss., Business Manager and Medical Record Librarian, Houston Hospital

Engineering Section

Irwin G. Bircher, D.V.M., 50 University Ave., Rochester 5, N. Y., County Veterinarian

Harlan G. Formo, M.P.H., 115 Court House, Duluth, Minn., Public Health Engineer, District IV, State Health Dept.

Alfred A. Gannon, 16205 Tracey, Detroit 27, Mich., Sanitarian, Wayne County Health Dept.

Pharm. Ralph T. Goerner, Jr., (HC) USN, U. S. Naval Station, Treasure Island, San Francisco, Calif., Sanitarian

Eric J. Hannemann, 806 Highland Ave., Austin, Tex., Graduate Work in Sanitary Engineering, Univ. of Texas

Bernard L. Jacobson, Box 2892, University, Ala., Student, Univ. of Alabama

C. C. Potter, 3520-54th, Des Moines 10, Iowa, Asst. Sanitary Engineer, State Dept. of Health

Thomas J. Rinaldo, 465 Concord St., Framingham, Mass., Asst. Sanitary Engineer, Water Division, Metropolitan District Commission

Major Clyde M. Turner, MSC, 9829th TSU, Engineer School, Ft. Belvoir, Va., Sanitary Engineer

Industrial Hygiene Section

George G. Richards, 1940 South 16th East, Salt Lake City 5, Utah, Industrial Hygiene Technician, State Health Dept.

Food and Nutrition Section

Marian L. Arnold, 172 Westminster St., Hamden 14, Conn., Nutrition Director, Connecticut Dairy and Food Council

Slava Malec, 217 E. Broad St., Bethlehem, Pa., Staff Nutritionist, State Dept. of Health

Margaret A. Ohlson, Ph.D., Michigan State College, East Lansing, Mich., Head, Foods and Nutrition Dept.

Maternal and Child Health Section

Catherine D. Carlson, M.D., International House, Berkeley 4, Calif., Student, School of Public Health, Univ. of California

Ernest W. Hancock, M.D., 1103 State House, Lincoln, Neb., Chief, Division of Services for Crippled Children, Dept. of Assistance and Child Welfare

Pedro Magana-Erosa, M.D., 10/a. de Puebla 204, Depto. 6, Mexico, D. F., Mexico, Pediatrician, Unidad Sanitaria y Estacion de Adiestramiento de Xochimilco

Henrietta L. Marquis, M.D., Medical Arts Bldg., Charleston, W. Va., Pediatric Consultant, State Health Dept.

Ursula G. Sanders, M.D., 17 Capitol St., Concord, N. H., Asst. Director, Maternal and Child Health Division, State Dept. of Health

Jessie J. Turnbull, Sc.D., Elizabeth Steel Magee Hospital, Pittsburgh 13, Pa., Supt.

Public Health Education Section

Samuel J. Barham, 601 Topeka Blvd., Topeka, Kans., Exec. Director, Kansas Hospital Service

Francis G. Bean, M.D., 223 Washington Ave., Bennington, Vt., Administrator, Putnam Memorial Hospital

Mary I. Cawley, 364 Edison St., Staten Island 6, N. Y., Public Health Analyst, Venereal Disease Research Laboratory, U.S.P.H.S.

Louie H. Crowl, D.D.S., 3201 Cutter Way, Sacramento 17, Calif., Director of Health Education, McClellan Air Force Base

Ruth L. Flater, 526 Goodwyn Institute, Memphis, Tenn., Sec., Health Section, Community Council of Memphis-Shelby County

Arden E. Hardgrove, 231 West Oak St., Louisville 3, Ky., Administrator, Norton Memorial Infirmary

Ruskin King, M.D., 10 West Taylor St., Savannah, Ga., Private Pediatrician

Fraser D. Mooney, M.D., C.M., 100 High St., Buffalo 3, N. Y., Supt., Buffalo General Hospital

Mary H. Parks, M.P.H., 18 Dove St., Albany, N. Y., Asso. Public Health Educator, State Dept. of Health

Willard C. Rappleye, M.D., Sc.D., 630 West 168th St., New York, N. Y., Dean, Faculty of Medicine, Columbia Univ.

Lauritz S. Ylvisaker, M.D., Fidelity Mutual Life Insurance Co., 25th and Parkway, Philadelphia, Pa., Vice-President and Medical Director

Lawrence Zuccolo, 723-17th St., Union City, N. J., Student, New York Univ.

Public Health Nursing Section

Maude C. Bailey, M.A., 4217 Blossom St., Columbia, S. C., Hospital Consultant, Maternal and Child Health Division, State Board of Health

Margaret G. Bennett, c/o North American Embassy, Montevideo, Uruguay, S. A., Consultant Public Health Nurse, Institute of Inter-American Affairs

Anna K. Bergstrom, R.N., 307 Court House, Springfield, Mo., Public Health Nurse, State Crippled Children's Service

Judith S. Cantor, 500 Riverside Drive, New York, N. Y., Student, Teachers College, Columbia Univ.

Florence M. Clark, R.N., 17 Capitol, Concord, N. H., Director, Public Health Nursing Division, State Dept. of Health

Elizabeth Dills, R.N., B.S., George A. Hormel & Co., Austin, Minn., Nurse Consultant and Visiting Nurse

Amelia M. Engel, 2300 Bronx Park East, Bronx 67, N. Y., District Supervising Nurse, City Dept. of Health

Hylda A. Harp, R.N., M.P.H., 2825 N. 58th St., Milwaukee, Wis., Supervisor of School Hygiene, City Health Dept.

Lucile M. Johnson, R.N., B.S., 805 Sixth St., Eureka, Calif., Supervising Public Health Nurse, Humboldt County Dept. of Health

Genevieve S. Jones, 2405 First St., N. W., Washington, D. C., Senior Asst. Nurse Officer and Tuberculosis Nursing Consultant, U. S. P.H.S.

Marjorie A. McIntosh, Ottawa Civic Hospital, Range Rd., Ottawa, Ont., Canada, Instructor of Nurses and Asst. Supervisor, Communicable Disease Unit

Birdie M. McKee, R.N., B.S., Red Cross Nursing Service, 14 Park Ave., Caldwell, N. J., Supervising Nurse

Eleanor J. Pingrey, 2019 E. 3rd. Ave., Durango, Colo., Student, Univ. of Colorado

Jeanne Richie, R.N., B.S., R.F.D., Rialto, Calif., Public Health Nurse, Imperial County Health Dept.

Eula P. Rogers, 4173 S. Elati, Englewood, Colo., Supervisor of Public Health Nurses, Arapohoe County

Jeane W. Walvoord, R.N., M.S.P.H., c/o American Mission, Amoy, South Fukien,

China, Supervisor of Public Health Nursing, Board of Foreign Mission of Reformed Church

Epidemiology Section

Carl M. Eklund, M.D., Rocky Mt. Laboratory, Hamilton, Mont., Senior Surgeon, U.S. P.H.S.

Major John H. Scruggs, V.C., Fort MacArthur, San Pedro, Calif., Station Veterinarian

School Health Section

Leo J. Wade, M.D., Washington Univ., St. Louis 5, Mo., Director, Student Health Service and Asst. Professor of Preventive Medicine and Public Health

Dental Health Section

Howard M. Johnston, D.D.S., 2300 Durant Ave., Berkeley 4, Calif., Dentist

Perley J. Lessard, D.D.S., 51 Deering St., Portland 4, Me., Dentist

Carlos E. de Oliva Paz, D.D.S., 782 Uruguay St., Buenos Aires, Argentina, S. A., Dentist for President and Senate of Argentina

Unaffiliated

Philip D. Bonnet, M.D., 750 Harrison Ave., Boston 18, Mass., Administrator, Massachusetts Memorial Hospitals

H. Robert Coler, M.D., 55 Shattuck St., Boston 15, Mass., Student, Harvard School of Public Health

Dean Conley, 22 East Division St., Chicago 10, Ill., Exec. Secy., American College of Hospital Administrators

Mark H. Eichenlaub, 4800 Friendship Ave., Pittsburgh, Pa., Supt., Western Pennsylvania Hospital

Albert G. Engelbach, M.D., 330 Mt. Auburn St., Cambridge 38, Mass., Administrator, Mount Auburn Hospital

Lee C. Gammill, 6221 South Main St., Houston 5, Tex., Administrator, St. Luke's Episcopal Hospital

Marianne S. Hahn, M.D., School of Public Health, Univ. of North Carolina, Chapel Hill, N. C., Student in Public Health Administration

John N. Hatfield, Pennsylvania Hospital, 8th and Spruce Sts., Philadelphia 7, Pa., Administrator

Edgar C. Hayhow, Ph.D., East Orange General Hospital, East Orange, N. J., Director

A. J. Hockett, M.D., Wilmington General Hospital, Wilmington, Del., Medical Director

F. Stanley Howe, Orange Memorial Hospital, Orange, N. J., Director

Stuart K. Hummel, Silver Cross Hospital, Joliet, Ill., Supt.

Clement W. Hunt, M.A., 25 N. 26th St., Camp Hill, Pa., Exec. Director, Capital Hospital Service, Inc.

Lt. Col. James T. McGibony, M.C., New Tripler General Hospital, APO 958, San Francisco, Calif., Commanding Officer

C. Rufus Rorem, Ph.D., 311 South Juniper St., Philadelphia 40, Pa., Exec. Secy., Hospital Council of Philadelphia

Charles M. Royle, 133 East Ave., Rochester 4, N. Y., Exec. Manager, Rochester Hospital Council

Jean Savage, 130 Broadway, Chicopee Falls, Mass., Director of Social Service, Holyoke Hospital

Moir P. Tanner, 219 Bryant St., Buffalo 9, N. Y., Supt., Children's Hospital

Peter D. Ward, M.D., C.M., 125 West College Ave., St. Paul 2, Minn., Director, Charles T. Miller Hospital

George O. Whitecotton, M.D., 2701-14th Ave., Oakland 6, Calif., Medical Director, Alameda County Institutions

Norbert A. Wilhelm, M.D., 721 Huntington Ave., Boston 15, Mass., Director, Peter Bent Brigham Hospital

DECEASED MEMBERS

Mrs. Edna M. Kech, Harrisburg, Pa. Elected Member 1940, Elected Fellow 1946, Public Health Education Section

Conrad Kinyoun, Savannah, Ga., Elected Member 1926, Elected Fellow 1933, Laboratory Section

Edward L. Miloslavich, M.D., Zagreb, Yugoslavia, Elected Member 1926, Elected Fellow 1932, Elected Life Member 1933, Industrial Hygiene Section

Florence A. Gates, South Nyack, N. Y., Elected Member 1946, Public Health Nursing Section

Harold J. Halligan, M.D., Jersey City, N. J., Elected Member 1946, Public Health Education Section

Mrs. Harriett M. Williams, Akron, Ohio, Elected Member 1945, Public Health Education Section

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

(Supplemental to list in May Journal)

Positions Available

Qualified Director of Public Health Nursing program within Department of Nursing Education in College of Arts and Sciences in Eastern University. Annual salary $5,000. Write Department of Nursing Education, University of Rochester, Rochester 3, N. Y.

Public **Health Nursing Education Director**, leading to Director of Nurses position within a year. Salary $275–$300; good experience and background.

Also, opening for Public Health II, $230 beginning salary.

Write: Director, Weld County Health Department, Court House, Greeley, Colo.

Graduate in Bacteriology with some background in chemistry and experience in field of sewage and water research or treatment. To take charge of section in newly organized research project, Eastern U. S. Salary $3,200–$4,200 depending upon qualifications. Write **Box A-11.** Employment Service. A.P.H.A.

Nurses are needed for public health work in Texas. The program is conducted under a Merit System. Compensation range for Sr. Public Health Nurses from $2,277 to $2,553 per year. Compensation range for Jr. Public Health Nurses from $2,001 to $2,415. Compensation for War Emergency Nurses from $1,725 to $2,139. In addition to above salary; possible provision of approximately $600 car allowance annually. Write **Box A-12.** Employment Service. A.P.H.A.

District Health Officer. Two positions opened in progressive areas. Salary $7,440 to $9,120 per annum, plus traveling expenses. Applicant should possess three years of experience in professional medical work and one year graduate study in public health. Address inquiries to Arthur L. Ringle, M.D., State Director of Health, 1412 Smith Tower, Seattle, Wash.

Public Health Nurses. Several excellent positions available in full-time health departments in attractive areas in State of Washington. Salary range $2,640 to $3,360 per annum, plus traveling expenses. Applicant should possess one year of experience in public health work and one year of graduate study in public health. Address inquiries to: Anna R. Moore, R.N., Chief, Public Health Nursing Division, 1412 Smith Tower, Seattle, Wash.

City Health Commissioner for New England city; 55,000 population. Progressive city. Excellent environment. Salary $6,000. Reply in detail. Mayor's office, City Hall, Pittsfield, Mass.

Veterinarian for modern (quality) milk control program. Beginning salary $3,120, annual increments. Car furnished. Position provides for vacation, sick leave, retirement benefits, permanency. For further particulars write Charles A. Neafie, M.D., Director, Department of Public Health, Pontiac 15, Mich.

Pathologist, certified by American Board of Pathologists. Salary commensurate with ability and experience. Excellent opportunity. Large addition under construction. Write in detail to Superintendent, South Side Hospital, Pittsburgh, Pa.

Three openings for **Public Health Nurses** in Santa Cruz County. Salary $248–$260 monthly. General services in rural area. Must furnish own car, mileage paid. Apply to: Charles C. Gans, M.D., Santa Cruz County Health Department, 21 Front Street, Santa Cruz, Calif.

Openings in Public Health Department, New Mexico

Public Health Nursing Consultant	$325–$420
Public Health Nurse-Midwife Consultant	325– 420
Public Health Nursing Supervisor	250– 325
Public Health Nurse-Midwife	225– 290
Public Health Nurse	200– 260
Graduate Nurse	170– 200

Write to: Merit System Council, Box 939, Santa Fe, N. M.

Physicians Wanted

The Tennessee Valley Authority announces openings for well qualified physicians. Training and experience in Public Health and Employee Medical Services are desirable. Salaries are based on 40 hour week schedule with periodic within-grade increases. Retirement, annual and sick leave benefits are provided. Interested candidates should write the Tennessee Valley Authority, Division of Personnel, Knoxville, Tenn.

Graduate Assistantships in Bacteriology

Candidates must enroll in Graduate School. Eight credit hours of graduate work leading to master's or doctor's degree permitted per semester. Stipend $1,000 for the academic year. Approximately 12 hours of laboratory teaching or preparations required per week. Send application for admission to Dean of Graduate School. Send personal data, transcript, and recommendations to Chairman of Department of Bacteriology, University of Michigan, Ann Arbor, Mich.

Public Health Opportunities in Connecticut

Openings for epidemiologist; crippled children's physician; child hygiene physician and local health consultant at $6,300–7,500 salary range. Clinical psychiatrist, salary range $6,840–8,280. Three years' employment or training including experience in child psychiatry required.

Write: Personnel Department, State Capitol, Hartford, Conn.

Sanitary Engineer or Sanitarian, recent graduate, with engineering or science degree. Generalized sanitation program. City of 50,000 population. Car allowance. Vacation, sick leave and retirement benefits. Starting salary $3,600 per annum. Communicate with J. Burris Perrin, M.D., C.P.H., Health Officer, City of La Crosse, Wis.

Dental Hygienist. City of 50,000 population, twenty-four schools. Dental clinic. Starting salary $2,900 per annum with vacation, sick leave and retirement benefits. Communicate with J. Burris Perrin, M.D., C.P.H., Health Officer, City of La Crosse, Wis.

Neuropsychiatrist with pediatrics training to direct child guidance program being conducted by private foundation on state-wide basis, New Mexico. Must be diplomate of his board. Also assistant to Director, some general qualifications. Salaries at general level paid for similar services in comparable locations. New Mexico Health Foundation, 819 East Central, Albuquerque, N. M.

Health Officer for six county unit in Northeast Colorado with offices in Sterling. Estimated population of district 59,000. Budget provides for personnel of 16. Minimum salary $6,000 plus travel, and may be increased depending upon qualifications of applicant. Write Dr. Paul R. Hillebrand, Brush, Colo.

Community Health Educator for Midwestern city. Demonstration program under joint sponsorship of city health department and a local voluntary agency. Program will eventually be absorbed by the official agency. University center. Challenging opportunity of demonstrating value of health education to community. Write **Box A-13.** Employment Service. A.P.H.A.

Laboratory openings requiring professional training and experience in State Health Department, East.

1. Research Microbiologist
2. Principal Biochemist
3. Senior Sanitary Chemist
4. Dairy technologist

Write Box **A-15.** Employment Service. A.P.H.A.

Public Health Staff Nurses for Linn, Yamhill, and Union Counties. Applicants must have had at least one year in approved program of study in Public Health Nursing. Under Merit System. Salary range $2,700–$3,300 plus travel allowance. Address correspondence to: Dr. Harold M. Erickson, State Health Officer, Portland 5, Ore.

Public Health Nurse: Generalized public health nursing program in progressive official agency in rural-suburban area adjoining Washington, D. C. Beginning salary $2,400. Trainees accepted. Fifteen day vacation and sick leave, 35½ hours per week. Mileage allowed for use of personal car. Write Director of Nurses, Montgomery County Health Department, Rockville, Md.

Director with supervising experience in public health nursing to direct newly re-

organized visiting nurse association in industrial city of 22,000. Salary, car allowance and other details upon request. Write Box **A-14.** Employment Service. A.P.H.A.

Full-time **Health Officer,** town of 26,000, convenient to medical and cultural centers, salary $6,000 plus mileage. Write: Chairman, Board of Health, Milford, Conn.

Public Health Nurse. Salary range $2,640–$3,120 (probably more beginning July 1). One year of postgraduate public health nursing training. Generalized service. Merit system and good personnel policies. Write: Division of Public Health Nursing, Kern County Department of Public Health, P. O. Box 120, Bakersfield, Calif.

Alaska Territorial Department of Health. Health Education Consultant wanted. Salary range $4,104–$4,644; minimum requirements college degree and one year graduate work in public health. Experience: one year full-time paid employment in public health education plus additional one year employment in any of allied fields. Write Box 1931, Juneau, Alaska.

Hearing and Vision Consultant. Minimum of two years' practical experience in hearing and vision programs; college graduate plus one year graduate training in psychology, speech, or related field with studies of handicapped children; $3,360 to $4,260. Civil Service status. Retirement. Permanent. Apply to: Harold M. Erickson, M.D., State Health Officer, Oregon State Board of Health, 1022 S.W. 11th Ave., Portland 5, Ore.

Qualified Public Health Nurse for itinerant work in tuberculosis in areas without local public health nursing services. Beginning salary $230 per month with $100 expense account. Furnish own car. Write: Public Health Nursing Section, State Dept. of Public Health, 515 Majestic Building, Denver 2, Colo.

Commissioner of Health, well established county health department, New York State. Salary $7,500 plus necessary traveling expenses. Write Box **A-17.** Employment Service. A.P.H.A.

Two qualified **Public Health Nurses** for staff duty in well established generalized program for California city and county population of 65,000. Full staff consists of supervisor and 9 staff nurses. Salary $2,916 to start, 5 increments to $3,540. Car required, 6¢ mileage. 5½ days, 38 hours; 15 days' annual vacation; 5 days' annual sick leave. Apply: H. O. Swartout, M.D., Dr.P.H., County Health Officer, P. O. Box 360, San Luis Obispo, Calif.

Sanitary Engineer for permanent connection with established company manufacturing sanitary equipment. Duties include technical advisory functions with the company as well as educational work with health departments and trade groups. No direct selling involved. Headquarters Northeast, travel half time. Desire man experienced in public health work and, if possible, sewage disposal work. Starting salary $4,000, plus actual traveling expenses. Write Box **A-16.** Employment Service. A.P.H.A.

Supervisor Health Education Department for Chicago and Cook County Tuberculosis Institute, man preferred. Candidates must have public health background and experience in community education programs. Salary open. Excellent opportunity for developing broad education in tuberculosis control programs. For further information write: Dr. E. E. Kleinschmidt, Tuberculosis Institute of Chicago and Cook County, 1412 Jackson Boulevard, Chicago 7, Ill.

Bacteriologist with Ph.D. for full-time research in medical institute; research experience. Salary $6,000 annually, dependent upon training and experience. Write **Box A-18.** Employment Service. A.P.H.A.

Engineering Graduate, age 35–40, not less than 5 years' experience in water pollution correction work. Technical competence as well as knowledge control techniques; experience in dealing with industrial management and municipal officials; required residency western part of state. Salary range $4,020–4,740, plus expenses outside home station. Civil Service appointment. Apply Michigan Stream Control Commission, Box 87, Lansing 1, Mich.

Physician for well established California health department serving mixed urban and rural population of about 65,000. Male or female. Work largely in child hygiene conferences but moderate amount of time spent in field epidemiology; immunization campaigns; dagnosis and treatment venereal diseases. Five and one-half days; 38 hours; 15 days' vacation, 5 days' sick leave annually. Car needed, 6¢ mileage. Salary $5,232 to start, five increments to $6,360. Experienced candidate may start at higher level. Apply: H. O. Swartout, M.D., Dr.P.H., County Health Officer, Box 360, San Luis Obispo, Calif.

Three Staff Nurses, postgraduate work public health nursing or acceptable public health experience. Salary range

$2,640–2,940. Starting rate based on training and experience. Own automobile required; 7¢ mileage. Write J. B. Eason, M.D., City Health Officer, City Hall, Spokane, Wash.

County and District Health Officers, $7,200 to start; ample travel allowance. Openings coastal and north central Oregon; merit status; written examination unnecessary. Graduation from approved medical school including one year internship and preferably one year graduate study in public health. Permanent. Apply to: Harold M. Erickson, M.D., State Health Officer, 1022 S. W. 11th Avenue, Portland 5, Ore.

Public Health Nurses for attractive rural area; southern Michigan; short distance several important urban centers. Opportunity for supervised experience and university study. Salary excellent, dependent upon experience and qualifications; systematic increments; 40 hour week, liberal travel allowance. Write Director, Eaton County Health Department, Charlotte, Mich.

Physician to head established health and medical service center in Greenbelt, Md. Population 8,000. Planned community, 30 miles from Washington, D. C. Prepayment plan in effect now. Minimum annual income guaranteed as agreed upon. Housing available. Write Greenbelt Health Association, 30 D Ridge Road, Greenbelt, Md.

1. **Health Officer**
2. **Public Health Nurses**

for six county health unit in Northeastern Colorado. Population 59,000, essentially rural 2½ hours from Denver. Staff of 16 anticipated. Health Department will be housed in a new wing of the local hospital. Write: P. O. Box 1296, Sterling, Colo.

Public Health Staff Nurses in new Quadri-County Health Department, Southern Illinois. Generalized service. Salary $2,400 plus mileage. Write or wire: Medical Director, Quadri-County Health Department, Golconda, Ill.

Statistician, graduate accredited college or university. Statistics or higher mathematics major. At least 2 years' experience in Public Health Statistics within past 5 years. Salary range $2,700–3,900 with excellent opportunity for promotion. Liberal retirement privileges. Write: State Health Officer, P. O. Box 210, Jacksonville, Fla.

Assistant Director of Public Health in city public health department of 150 employees. Southern city of approximately 200,000. Must have M.D. and either Master's degree in public health or equivalent in experience. Salary $6,144–7,368.

Superintendent of Sanitation. Degree in sanitary engineering with municipal experience. Salary $4,080–4,896. Write: **Box A-19.** Employment Service. A.P.H.A.

Tuberculosis Clinician to serve as Assistant Director of Bureau of Tuberculosis Control and Director of Clinics for Tuberculosis Control, Florida State Board of Health with residence in Jacksonville, Fla. Must be graduate of approved A.M.A. School of Medicine and have minimum of 4 years' full-time paid experience in Public Health or Tuberculosis Control. Salary up to $7,200 depending upon training and experience. Daily allowance of $6.00 while traveling. Must obtain license to practise in Florida within one year of appointment. Write Wilson T. Sowder, M.D., State Health Officer, P. O. Box 210, Jacksonville 1, Fla.

Public Health Nurses for staff positions in generalized program. Rural and urban. Forty hour week. Vacation and sick leave according to Washington State Merit System. Monthly salary scale $200–$280. Car essential; mileage allowance. Write District Health Officer, Clark County-City Health Department, **Box 149,** Vancouver, Wash.

Public Health Nurse Supervisor in generalized program. Rural and urban. Vacation and sick leave according to Washington State Merit System. Monthly salary scale $250–$310. Write District Health Officer, Clark County-City Health Department, **Box 149,** Vancouver, Wash.

Field Associate with a national voluntary health agency at interesting salary in an interesting job. Experience, training, ability, and personality are factors which will be equally important in determining eligibilty. Offers opportunity to implement national policy in program development and community organization for public health action on state and local levels. Male or female, over 30 and under 50, willing and able to travel, with graduate degree in public health or social work, and at least three to five years' executive experience. Retirement plan, one month vacation. For further details, communicate with **Box A-20,** Employment Service, A.P.H.A.

POSITIONS WANTED

Academic position as **Professor of Bacteriology** or **Preventive Medicine.** Ph.D.; M.D. expected in spring, 1948. Sixteen years' experience in teaching and research (7 years as Professor of Bacteriology). Many publications including textbook of bacteriology for medical students. Write **Box Ph-2.** Employment Service. A.P.H.A.

Statistician-Administrator. Ten years' professional experience. Completing assignment in nation-wide health survey as chief of staff of 40–80 professional and clerical personnel doing following operations: coding, IBM tabulations, computations, analyses, etc. Intensive training in statistics, mathematics and accounting. Write **Box St-1.** Employment Service. A.P.H.A.

Physician, Woman, New York University graduate 1945, M.P.H. expected May, 1948; interested in position in or outside the U. S. Predominant interest communicable disease control. Write: **Box Ph-3.** Employment Service. A.P.H.A.

Engineer, ASCE, June; B.S., Public Health Eng.; M.S., Sanitary Eng.; desires to develop idea for "Model Communities" as adapted to rural areas in Southern Asia; South America. Interested in employment with organization or government engaged in redeveloping existing communities with regard to housing, sanitation, water supply, and general municipal facilities. Experienced overseas and domestic; single; 24. Write: **Box E-3.** Employment Service. A.P.H.A.

Clinician, 12 years' practice in surgery, gynecology, and general medicine abroad and in the U. S. Citizen, male, married. Interested in clinical opening in group practice hospital, industry, or health department. Write **Box Ph-4.** Employment Service, A.P.H.A.

Dentist, male, 30 years old, single. M.P.H. expected in June, 1948. Three years' experience in clinical and administrative work. Interested in administrative dental opening with or without clinical responsibilities. Write **Box D-1,** Employment Service, A.P.H.A.

Veterinarian, M.P.H. degree; 2 years' experience federal meat inspection; 2 years teaching milk hygiene and assistant in bacteriology in large university. Interested in public health openings. Will consider full-time positions (or part-time with practice opportunities) in state or local work, agencies or institutions. Available between July 1 and August 1. Write **Box V-3,** Employment Service, A.P.H.A.

Sanitary Engineer, B.S., M.S., M.P.H.; seven years' experience with State Health Department; three years in Army Sanitary Corps; two years in industry, desires position in public health engineering. Write **Box E-4,** Employment Service, A.P.H.A.

Bacteriologist, M.S., minor chemistry, 9 years' extensive experience in research, clinical bacteriology, and industrial development. Interested in responsible position in public health, industrial laboratory, or teaching institution. Write **Box L-D-1,** Employment Service, A.P.H.A.

Health Educator, female, six years' experience in community organization for health with voluntary agency; 5 years' experience as supervisor of a community health center; 5 years' experience in university health service, R.N., B.S. Seeks opportunity in health education or administrative opening. Write **Box H-E-3,** Employment Service, A.P.H.A.

Physician, woman, considerable experience in practice of pediatrics and school health administration, consultant to professional and voluntary agencies, desires interesting position part or full time in greater New York area. Write **Box Ph-6,** Employment Service, A.P.H.A.

Advertisement

Opportunities Available

WANTED—(a) Public health physician for appointment as state commissioner of health; Master's or Doctor's degree in public health medicine with minimum five years' experience; $12,000. (b) Young physician, preferably with military experience and interest in field of preventive medicine, to direct student health department; university medical school; full-time appointment with opportunity to engage in teaching and research; $7,000. (c) Young dentist experienced or trained in public health dentistry; regional consultant position; South. (d) Public health administrator, key position in one of the leading cities of the Middle West; outstanding candidate required. (e) Medical director, division of communicable disease control; duties include supervising school of health; town of 100,000 located short distance from university medical center; Middle West. (f) Several well qualified public health physicians and dentists for appointments to Germany, Austria, and Italy; headquarters of organization in Paris. (g) Public health physician to direct health department of rapidly growing county; present population 155,000; staff of 30 personnel, Pacific Coast. **PH6-1** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Health educator to direct division of county community fund and council of social agencies; newly created position; $4,000. (b) Sanitary chemist, with working knowledge of chemistry of water and sewage; experience in water filtration plants and sanitary engineering laboratories advantageous; chemist, Ph.D., with interest in sanitary chemistry field eligible; health department of modern community, new research institution; $4,900–$5,900; Southwest. (c) Superintendent of sanitation; city health department; 150 employees; Southern city, 200,000; $4,080–$4,896. (d) Vital statistician to supervise and maintain system of registration; degree with graduate training in public health or statistics required; state department of health; West. (e) Sanitary engineers experienced with drainage problems, insect control, water purification and sewage disposal; knowledge of Spanish advantageous; South America. (f) Sanitarian; health department serving three counties; Michigan. (g) Young women, Ph.D.'s or M.D.'s for academic appointments; university having highly organized program of professional training in health field for teachers; one should be qualified in teaching correctives; other in health education; students, undergraduates and graduates; ranks dependent upon qualifications. **PH6-2** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago 11.

WANTED—(a) Public health nurse to direct nursing service serving two residential towns; generalized program; eventual staff of twenty public health nurses; minimum $4,000. (b) Assistant professor of public health nursing; preferably one with Master's degree and supervisory experience; collegiate school; $4,000–$5,000; ten month year; additional income for summer teaching. (c) Public health supervisor to direct staff of thirty nurses; metropolitan health department, Middle West. (d) Student health nurse; young women's college; Pacific Coast. (e) Public health nurses with executive ability to supervise modern health center in South America; knowledge of Spanish, Portuguese or French desirable. (f) Public health nurse for position of health coördinator; public school system, small town in Wisconsin. **PH6-3** Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago, Ill.

Opportunities Wanted

Young dentist; D.D.S., M.S., degrees; recently received Master's degree in Public Health; has done considerable research work on problem of dental caries; prefers public health dentistry or teaching position in pedodontia; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Chemical engineer; B.S. in Chemical Engineering; year's graduate training in Sanitary Engineering, Harvard; seven years, communicable disease control, major part of work in malarial control; for further information please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitary engineer; B.S. in Civil Engineering with Sanitary option; considerable work toward Master's degree in public health engineering; eight years, director of sanitation, state health department, four years, sanitary engineering in foreign fields; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health physician; M.D., southern university; M.P.H., Johns Hopkins; 10 years' experience as administrative health officer; for further information, please write Burneice Larson, Director, Palmolive Building, Chicago 11.

Public health nursing executive; M.S. degree, Health education and Public Health; six years, executive secretary, county tuberculosis association; seven years, director, metropolitan public health nursing association; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; A.B., middle western school, Sc.D., Johns Hopkins; eight years, director, health education, state tuberculosis association; past several years on faculty of school of hygiene, eastern university; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

NEWS FROM THE FIELD

REGIONAL CONFERENCE ON LOCAL HEALTH UNITS

The first in a series of regional conferences to get home town action on the problem of getting ever person in every county under the umbrella of local health protective services was held in Mitchell, Ind., on April 21 and 22. Under the sponsorship of the National Health Council, and planned with the cooperation of the health departments of the five states of Indiana, Kentucky, Michigan, Ohio, and Wisconsin, this conference brought together representatives of a variety of voluntary health and citizen agencies.

The Indiana State Health Department was host to the conference and made arrangements for the details of recording, publicity, stenographic, and other services. It also had the largest delegation.

Except for several resource persons the conference group was selected by the respective state health officers to bring together those interests that could develop most effectively favorable opinion for extending local public health services in their states. The keynote of the conference was accented by Bailey B. Burritt, Executive Director of the National Health Council, in his opening address with a quotation from Woodrow Wilson to the effect that, "The highest and best form of efficiency is the spontaneous coöperation of free people."

The plan of the conference was for a general session the first morning to explore the problem areas to which working committees should devote the afternoon session. The problem areas were resolved into three major groupings, each of which was assigned to a working committee. These committees, each with a discussion leader and a recorder, grappled with their problem during an afternoon session. Their reports were then presented to the entire conference at an evening session.

The three main problems were defined as (a) securing public demand and support, (b) organization of a plan for each community including a consideration of the legislative and political factors affecting the development of such a plan, (c) accomplishing the plan through provision of adequate funds, a strong state health department, and qualified personnel. The discussions were active, with everyone participating and with colorful illustrations of specific conditions or achievements in the various states. There was universal agreement that local upsurge must be stimulated; that lasting results cannot be achieved by superimposing a state program upon local lack of knowledge and interest. The state's role, both of official and voluntary agencies, is that of stimulation, information, consultation, and assistance. The importance of local assistance in recruitment of personnel was also emphasized as was the necessity for training facilities. Inadequate salaries and an anomalous situation with respect to prestige, particularly as it affects the medical profession in public health, are the chief stumbling blocks to recruitment of personnel in adequate numbers.

The second morning discussions were carried on by the separate state groups. Here the plan was to apply the general findings of the previous day to the particular problems of the respective states. On this day the afternoon was devoted to the state group reports and general discussion of them and to a summing up.

The various state situations were reviewed. Michigan, for example, has nearly 100 per cent coverage but is currently struggling with the problem of personnel and with political currents that

are detrimental to effective completion of coverage. Kentucky, because of the constitutional limitations on salaries of public workers, is under the necessity of holding back demands for additional county units because of failure to secure personnel.

The Wisconsin Legislature has just passed a permissive health unit law and many citizen agencies throughout the state are demanding local action. There is hope that many areas may be organized in the near future. A meeting of 25 representative citizens was held on May 12 to develop a strategy for getting widespread public understanding of and demand for the services of local health departments throughout the state.

Ohio is handicapped by its public health law dividing the state into 203 health districts, a separate one for each city of 5,000 or more, and one for each county outside these cities. Since the law provides for consolidation of districts, however, the state health department has developed a plan for 37 county, city-county, and multi-county health departments to replace its 203 health districts. Some score of voluntary and citizen agencies in the state plan a survey of the various state public health laws as a basis for proposing amendments to the Ohio law.

Indiana's recent legislature passed a permissive health unit act and there is hope that the 1949 legislature will provide state aid to local health departments. One bi-county department has already been organized and sufficient interest has been created in enough areas so that if they become organized half of the state's population will be served instead of the less than one-quarter now served.

In summing up the two day discussions, Mr. Burritt used Haven Emerson's Catechism on What are the Seven Steps to the Temple of Health, which was used as display at the Princeton Conference on Local Health Units in September, 1947. These seven steps are:

1. A plan by the state health department
2. The organization of a state-wide citizen committee of voluntary and citizen agencies and approved by the governor
3. Completing legislative authority
4. Legal authorization for personnel and salaries
5. Agreement upon tax sources of support —local, state, and federal, for the local health department
6. Recruitment and training of personnel
7. Local community health council follow through to secure results and tax support

About 50 persons attended the conference. Chairmen and reporters of problem and state committees were drawn from the conference membership. Delegates represented parent-teacher associations, the Farm Bureau, CIO, state medical societies, Federation of Women's Club, American Association of University Women, state branches of such national agencies as the National Tuberculosis Association, National Society for Crippled Children, National Foundation for Infantile Paralysis, American Red Cross, as well as representatives of official health agencies. State health commissioners of three of the five participating states attended the conference.

The National Health Council staff is now analyzing the results of the conference with a view to determining whether it represents a pattern for similar conferences in other regions of the country.

AWWA Officers

The following officers of the American Water Works Association were elected recently to take office on May 7, 1948:

President—Linn H. Enslow, Editor, Water and Sewage Works

Vice President—A. P. Black, Professor of Chemistry, University of Florida

Treasurer—William W. Brush, Editor, Water Works Engineering

Harry E. Jordan is the permanent secretary of the Association, which has headquarters at 500 Fifth Avenue, New York.

AUSTRALIA'S MEDICAL CARE PROGRAM INCLUDES PHARMACEUTICALS

According to a federal Act, passed in 1947, pharmaceutical benefits now are included in the Australian government's health and social services program. Compiling and reviewing at regular intervals a formulary defining the scope of the benefits is in the hands of a permanent committee of seven members, including three medical practitioners and pharmacologists and pharmacists.

A prescription, in authorized form consisting of items included in the formulary, and signed by a physician, will be presentable without charge to the patient to any chemist or dispensary approved under the Act.

In reporting on this development, the Australian Information Service says, "It is hoped that the public will receive a service not only as good as present practice, but actually better, because of the elimination of drugs long superseded."

DR. PARRAN TO CHILDREN'S FUND

Thomas Parran, M.D., who retired as Surgeon General of the U. S. Public Health Service on April 6, leads a temporary mission to the Far East of the United Nations International Children's Emergency Fund. He is making a study preparatory to the extension of special forms of Children's Fund aid to mothers and children. Dr. Parran's mission is in line with the Fund's Executive Board recent directive that future allocations give special consideration to the needs of children in countries outside Europe. Five and a half million dollars has already been allocated for a child aid program in China, and a million and a half for other Far Eastern Countries.

Dr. Parran's tour of duty, which began late in April and will take about two months, will cover the Philippines, China, Hong Kong, French Indo-China, Malaya, Singapore, Indonesia, Thailand, Burma, Ceylon, India, and Pakistan.

PROFESSOR STARIN RETIRES

William A. Starin, Ph.D., Chairman of the Department of Bacteriology, Ohio State University, was honored at a dinner in Columbus on May 8. He will retire from active service at the end of the academic year, after 38 years of teaching at the university. He is known particularly for his work on filtrable viruses, pathogenic fungi, immunology, and pathogenic bacteriology. He has been a member of the American Public Health Association since 1933 and a Fellow since 1943.

The William A. Starin Lectureship has been established at the university by Professor Starin's friends and former students. Those wishing to share in this permanent tribute may send contributions to Dr. Margaret D. Heise, Department of Bacteriology, Ohio State University, Columbus, Ohio.

NEW BI-COUNTY HEALTH DEPARTMENT IN ILLINOIS

Fred O. Tonney, M.D., is the Health Officer of the recently organized joint health department of Effingham and Shelby counties in Illinois. This department was established as a result of a referendum in 1946. The combined population of the two counties in 1946 was nearly 50,000.

ARMY MEDICAL DEPARTMENT EXPANDS TRAINING PROGRAM

The United States Army Medical Department announces an expansion of its educational and training program, the primary goal of which is an unequalled high standard of medical care for the U. S. Army. Public health training is part of this program with courses in public health, sanitary engineering, hospital administration, and related fields. Medical officers who desire to be certified by American specialty boards can participate in officially recognized programs leading to examination for specialist certification, including the In-

terim Specialty Board in Preventive Medicine recently announced for the medical officers of the services.

All six Corps of the Army Medical Department—Medical, Dental, Nurse, Veterinary, Medical Service and Women's Medical Specialist Corps—and both enlisted men and women and commissioned officers, are represented in these training courses. The Army Medical Department arranges for personnel to take the courses and pays the tuition when required. Full pay and allowance is offered for the period of study at civilian and Army institutions.

PEDIATRICS, A NEW JOURNAL

In January, 1948, *Pediatrics*, the Journal of the American Academy of Pediatrics, began publication. It is "the medium of expression of the Academy to the medical profession and the public," "brings to its readers a comprehensive survey of the pediatrics field," and "publishes original articles on scientific and clinical investigations in the field of pediatrics."

Hugh McCulloch, M.D., is the Editor-in-Chief. Contributing editors are Leona Baumgartner, M.D., of New York, John P. Hubbard, M.D., Director of the Academy's study of child health services, and Dr. Felix Hurtado of Havana.

Annual subscription to this new monthly journal is $10.00. Manuscripts, books for review, and correspondence concerning editorial matters should be sent to the Editor-in-Chief, 325 North Euclid Ave., St. Louis 8, Mo.; correspondence concerning subscriptions, advertising, and business matters to Charles C. Thomas, Publisher, 301–327 East Lawrence Ave., Springfield, Ill.

CECIL K. CALVERT, 1886–1948

On April 19, 1948, Cecil K. Calvert died at the age of 61. For forty years he served in various capacities in water purification work in Indianapolis, Ind. In 1908, Mr. Calvert joined the staff of the Indianapolis Water Company becoming Superintendent of Purification in 1936, which position he held at the time of his death. Among his more prominent accomplishments in the field of sanitary engineering was his work with the American Water Works Association, in which he was Chairman of the Water Purification Division and of the Committee on Control of Chlorination. He joined the American Public Health Association in 1927 and became a Fellow in 1946.

LONG ISLAND COLLEGE CONCLUDES POSTGRADUATE COURSE IN INDUSTRIAL MEDICINE

The Fifth Postgraduate Course in Industrial Medicine offered by the Department of Preventive Medicine and Community Health, Long Island College of Medicine, Brooklyn, N. Y., was concluded April 16 after running for two weeks.

Thomas D. Dublin, M.D., Professor and in charge of the course reports that the total enrollment of full- and part-time students was 75, the second largest of the postgraduate courses so far offered. Thirty-one of the matriculants were physicians, 26 nurses, and 18 members of other professions. Students from Belgium, China, and Egypt were included, as were representatives of 26 different organizations in 6 different states. The lectures given for the students are expected to be published in a volume of proceedings.

KANSAS PUBLIC HEALTH ASSOCIATION MEETS

The Kansas Public Health Association held its Sixth Annual Meeting in Topeka on April 16 and 17. At the meeting a feature was a dinner honoring Charles H. Lerrigo, M.D., for forty-seven years of public health service in the state.

The officers who will serve the Kansas

society during the forthcoming year are:

President—M. Leon Bauman, M.D., Parsons
President-elect—James M. Mott, M.D., Lawrence
Secretary-Treasurer—Evelyn Ford, Topeka

The 1949 Annual Meeting of the K.P.H.A. will be held in Pittsburg April 25 to 27.

MICHIGAN PUBLIC HEALTH ASSOCIATION

At its recent annual meeting the following officers of the Michigan Public Health Association were elected:

President—Mildred Cardwell, R.N., Ingham County Health Department
President-Elect—E. Frank Meyer, D.V.M., Grand Rapids
Vice-President—Joseph G. Molner, M.D., Deputy Commissioner and Medical Director, Detroit Department of Health
Secretary-Treasurer—Marjorie Delavan, Director, Bureau of Education, State Department of Health
Representative on Governing Council, A.P.H.A.—Kenneth R. Gibson, D.D.S., Dental Director, Children's Fund of Michigan

ILLINOIS PUBLIC HEALTH ASSOCIATION ANNUAL MEETING

The Illinois Public Health Association held its 8th Annual Meeting in Chicago on April 15 and 16. The attendance was well over 500. New officers were elected as follows:

President—Maude B. Carson, R.N., Springfield
President-Elect—Baxter K. Richardson, Springfield
Secretary-Treasurer—Harold M. Cavins, Ed.D., Charleston

WHO CHARTER RATIFIED

The final meeting in Geneva of the Interim Commission of the WHO on February 7 was climaxed by an announcement that 29 United Nations, 3 more than necessary, had ratified the charter of the WHO. By April 7, 26 of the ratifications had been deposited with the United Nations, thus bringing the WHO officially into being. In addition, 8 nations not members of the United Nations have ratified the constitution. This announcement was made by its Chairman, Dr. Andrija Stampar of Yugoslavia, who announced that the first session of the World Health Assembly will open in Geneva probably on June 24, 1948.

The United States is not among the member nations that have ratified the charter, the House Rules Committee having tabled the resolution indefinitely on March 12.

The budget of $6,000,000 adopted by the Interim Commission provides for fellowships, teaching equipment, and medical supplies to meet post-war health problems, world-wide campaigns against malaria, tuberculosis, and venereal diseases, and a top-priority program for mother and child welfare.

LATIN AMERICAN NUTRITION CONFERENCE

In an effort to encourage all Latin American countries to provide their peoples with a healthy diet, the Food and Agriculture Organization of the United Nations will hold a regional meeting of leading nutrition workers at Montevideo, Uruguay, starting July 28. Delegates have been invited from 18 Latin American countries and from France, the Netherlands, the United Kingdom, and the United States. The Argentine Republic, which is not a member of FAO, and interested international organizations have been asked to send observers.

The delegates will determine the gaps in existing knowledge about dietary habits, the state of nutrition, and the prevalence of deficiency diseases. They will plan measures to fill these gaps and attempt to develop and dovetail their national plans into a concerted attack to improve the nutrition of the people.

Serious malnutrition due to deficiency of protein, certain minerals, and vitamins, exists in many Latin American countries. Despite the fact that total

food production has increased in parts of Latin America, a large proportion of the population still exists on inferior and ill-balanced diets.

Recommended by the FAO Geneva Conference last summer, the 10 day meeting is the second of a world series planned by FAO on nutritional problems. The first, held in the Philippines in February, 1948, was concerned mainly with ways and means of improving rice diets in South East Asia.

PROGRESS IN STREAM POLLUTION CONTROL

About the time you read this paragraph, the Ohio River Valley Water Sanitation Compact will become effective. This Compact commits 8 states, comprising the Ohio River system, to a program of stream pollution abatement. To aid in carrying out the Compact a "Symposium on Water and Waste Treatment" will be held on October 16, 1948, in the Engineering Society Headquarters Building, Cincinnati, Ohio, for the purpose of providing a medium for disseminating the technical information essential to the solution of stream sanitation problems. For further information, write to Robert C. Head, Publicity Representative, American Institute of Chemical Engineers, 795 Greenville Avenue, Glendale, Ohio.

CANADA'S PUBLIC HEALTH FILM SURVEY

Supplement 3 of the *Medical and Biological Films Catalogue,* of the National Film Board of Canada, brings up to date the master list published in March, 1945, and two subsequent supplements published in July, 1946, and March, 1947. As with the previous lists, the films are classified according to the public health specialty such as industrial health and safety, cancer, personal hygiene, with the names and brief descriptions of specific films under each heading, also a comment of the suitability of each film for certain purposes. Additional information may be obtained from the Distribution Officer, Health and Medical Films, National Film Board, Ottawa.

NEW ANTIBIOTICS DIRECTORY

Second edition of *Antibiotic Substances, Their Biological and Chemical Properties,* has recently been published by the antibiotic section in the Division of Research Grants and Fellowships, National Institute of Health. It contains current material on source, biological activity, unit, potency, and miscellaneous properties of more than 150 antibiotic substances ranging alphabetically from actidione to viridan. The compilation includes a number of unnamed factors, as well as named chemotherapeutic agents from nonmicrobial forms (quercetin, tomatin, etc.). First edition of the guide was published early in 1947.

NEGRO HEALTH AND MEDICAL CARE

In January the Health and Medical Care Collection of Meharry College was a year old. By way of celebrating its first birthday it published an annotated list of books, periodicals, pamphlets, leaflets, and articles relating specifically to the health of the Negro. With the coöperation of state health departments, national organizations, and individuals the Collection now numbers nearly 500 items.

Thomas A. LaSaine, M.D., the director, renews his invitation to share with this Collection available material concerning the health of the Negro. The address is Health and Medical Care Collection, Meharry Medical College, Nashville 8, Tenn.

DR. NORTON SUCCEEDS DR. REYNOLDS AS NORTH CAROLINA STATE HEALTH OFFICER

The retirement of Carl V. Reynolds, M.D., Secretary and State Health Officer of North Carolina, Raleigh, as of July 1, 1948, has been announced. Dr.

Reynolds will move to California and live in Altadena.

John W. R. Norton, M.D., M.P.H., of Chattanooga, Tenn., has been appointed to succeed Dr. Reynolds. Dr. Norton is a native of North Carolina, born in 1898, a graduate in medicine of Vanderbilt University in 1928, and with a Master's degree in Public Health from the Harvard School of Public Health in 1936. Dr. Norton served four years as Health Officer of the City of Rocky Mount, N. C., and served for several years with the North Carolina State Board of Health in the Divisions of County Health Work and Preventive Medicine. Dr. Norton served in the Army Medical Corps during World War II, since which time he has been Chief Health Officer of the Health and Safety Department, Tennessee Valley Authority, Chattanooga, Tenn.

DEATH OF DR. RUPERT BLUE

Rupert Blue, M.D., Ex-Surgeon General of the U. S. Public Health Service, died on April 12 in Charleston, S. C., at the age of 80. Dr. Blue retired in 1932 after 39 years in the Service, 12 of them as Surgeon General by appointment of President Taft in 1912 and reappointment by President Wilson in 1916.

Dr. Blue was noted for his bubonic plague campaigns in San Francisco in the early 1900's. He conducted extensive rat extermination drives there. During the first World War he was adviser on sanitation for military establishments in the United States. In 1923 he was American delegate to the Opium Conference of the League of Nations.

Dr. Blue became a member of the American Public Health Association in 1912 and a charter Fellow in 1922.

VIRGINIA'S MODEL ALCOHOLIC CARE BILL

The Virginia Legislature, one of the few that meet in the even numbered years, has enacted a bill that sets up a Bureau of Alcohol Studies and Rehabilitation in the State Department of Health. Including an appropriation of $200,000 for the biennium, the new law places the initial responsibility for the study and treatment of alcoholics upon medical schools and hospitals.

The first of several state research centers will be located at the Medical College of Virginia in Richmond where patients will receive both hospital and clinic care.

In reporting the Virginia law, Joseph Hirsh, Acting Director of The Research Council on Problems of Alcohol, said it would " undoubtedly serve as a model for the rest of the country." He pointed out that none of the other seven states that have already established medical programs for the care of alcoholics provides such an integrated program as that of Virginia.

EDUCATIONAL OPPORTUNITIES IN INDUSTRIAL HYGIENE

Industrial Hygiene Newsletter for April, 1948 (Vol. 8, No. 4), has a list of schools that give complete courses in industrial hygiene. Classified into the 9 U. S. Public Health Districts and into courses for physicians and dentists, nurses, engineers, and chemists, this list gives the name and address of the school and a short description of the courses, the time required to complete them, and degrees offered.

The Industrial Hygiene Division of the U. S. Public Health Service, which publishes this monthly *Newsletter*, carefully warns that the list is not a complete one. It is recommended to readers, however, as the most complete such listing that has come to hand.

PUBLIC HEALTH SECTION OF EXCERPTA MEDICA

Excerpta Medica, the project for abstracting the world's medical literature was mentioned in the August, 1947,

Journal (p. 1049). At that time the first issue of the Dermatology and Venereology Section had been published. Now Vol. 1, No. 1, of Section IV on Medical Microbiology and Hygiene, has appeared, in January, 1948. Among its American board of editors are Drs. Charles Armstrong, Martin Frobisher, Jr., Hugh R. Leavell, Ernest L. Stebbins, and C.-E. A. Winslow. The material in this section is divided into three main classifications: Medical Microbiology, Hygiene and Public Health, and Medical Entomology and Medical Parasitology.

At the same time the first issue of Section XV on Tuberculosis appeared. Among its editors is J. Burns Amberson, M.D.

All but one of the fifteen sections have now begun publication.

ANOTHER MEDAL FOR DR. CORI

Dr. Carl F. Cori, a Nobel Prize winner and winner of a 1946 Lasker Award of the American Public Health Association, recently received the 1948 Willard Gibbs Medal of the Chicago Section of the American Chemical Society for his achievements in research on processes by which the human body converts sugar into energy. Dr. Cori is Professor of Biochemistry in the Washington University School of Medicine, St. Louis, Mo.

COMMITTEE TO STUDY FEDERAL GOVERNMENT'S MEDICAL AND HOSPITAL FACILITIES

The Commission on the Organization of the Executive Branch of the Government, which is headed by Herbert Hoover, has announced the following members of a committee which will investigate the government's medical and hospital services:

Tracy S. Voorhees, president of Long Island College Hospital, Brooklyn, N.Y., chairman; Drs. R. C. Buerki and O. H. P. Pepper (University of Pennsylvania), Hugh J. Morgan (Vanderbilt), Allen O. Whipple (Columbia), W. C. Menninger (Menninger Foundation), Ray Lyman Wilbur (Stanford), Frank R. Bradley (Barnes Hospital, St. Louis), Michael DeBakey (Tulane). Also on the committee are Charles F. Rowley, former trustee of Massachusetts Investors Trust; Henry Isham, president of Chicago's Passavant Hospital; Dr. Paul R. Hawley, Chief Executive Officer of the National Organization of Blue Cross Hospital Service Plans and Blue Shield Medical Service Plans; and Rear Admiral Joel T. Boone, secretary of the special board now investigating armed forces medical and hospital services.

MORE BABIES AND THEY LIVE LONGER

The National Office of Vital Statistics recently announced a new low infant mortality record for the United States in 1947 of 32.6. The number of live births registered also set a new high record of 3,720,000. The provisional general death rate for the country was 10 as compared with the lowest recorded, 9.9 in 1946.

CHANGES IN STAFF ASSIGNMENTS, U. S. PUBLIC HEALTH SERVICE

Several changes have taken place in the staff of the U. S. Public Health Service in Washington following the assumption by Dr. Leonard A. Scheele of his duties as Surgeon General.

The Federal Security Administrator has nominated for the rank of Major General, Drs. C. L. Williams, Sr., Chief of the Bureau of State Services, and R. C. Williams, Chief of the Bureau of Medical Services. Also nominated for the same rank was Dr. Rollo E. Dyer, Director of the National Institute of Health.

Dr. John R. Heller, who has served as Chief of the Division of Venereal Diseases since 1943, has been appointed Director of the National Cancer Institute, Bethesda, succeeding to the post

vacated by Dr. Scheele. Dr. Heller's position in the Division of Venereal Diseases will be assumed by Dr. Theodore J. Bauer who is at present on duty with the Chicago Board of Health as municipal venereal disease control officer.

INSTITUTE IN PUBLIC HEALTH ADMINISTRATION

The University College of Northwestern University, in coöperation with the U. S. Public Health Service, has announced a two week Institute in administration for principal administrative officers of state and local health departments. The Institute, July 12–23, will concern itself with administrative problems, and its registration is limited to 40 persons who must be health officials with managerial responsibilities.

The Institute was planned at an earlier regional conference of state and local health officers to meet gaps in the health officer's knowledge of such items as press and public relations, personnel administration, budget presentation, etc.

Registration fee for the Institute is $100, of which $10.00 must accompany registration request. Provision will be made for room and meals in Abbott Hall of the university at $60 per person for the period. Application should be made before June 21 to the University College, Northwestern University, 710 Lake Shore Drive, Chicago 11, Ill.

"THE AMERICAN ENGINEER" UNDER NEW MANAGEMENT

The National Society of Professional Engineers announces the appointment of Franklin F. Page as Editor of the *American Engineer*, the monthly publication of that Society. Prior to joining the staff of the NSPE, Mr. Page had had considerable experience in newspaper work and has been editor of *Constructor and Engineer*, a publication serving the northwestern part of the United States.

PERSONALS

Central States

RICHARD F. BOYD, M.D., M.P.H.,* who has served for some years as Chief of the Division of Local Health Administration, Illinois State Department of Health, Springfield, Ill., has resigned, effective May 17, to accept a position of Medical Officer, Welfare and Retirement Fund, United Mine Workers of America with offices at 900–15th Street, N.W., Washington 5, D. C. In this capacity Dr. Boyd will be associated with R. R. SAYERS, M.D., who is Chairman of the Medical Advisory Board, and who is responsible for developing plans for the medical care and hospitalization of approximately 400,000 bituminous coal miners in 26 states.

DORIS G. CHANDLER, M.P.H.,† has been appointed Director of Health Education of the National Society for the Prevention of Blindness, New York, N. Y. For the last few years she has been Executive Secretary of the Metropolitan Health Council of Dayton and Montgomery Counties, Ohio.

CHARLES T. DOLEZAL, M.D.,† has been appointed Assistant Director and Secretary of the Council on Professional Practice of the American Hospital Association, Chicago, Ill., to succeed HUGO V. HULLERMAN, M.D.,* resigned. Dr. Dolezal was formerly Superintendent of City Hospital of Cleveland, Ohio.

WINSTON H. TUCKER, M.D.,* Commissioner of Health of Evanston, Ill., represented the A.P.H.A. at a meeting on April 5 and 6 on a Subcommittee of the American Medical Association Council on National Emergency Medical Service, for the purpose of planning for the most effective use of the overall medical resources of the nation in case of another national emergency. HAROLD S. DIEHL, M.D.,* Dean of the University of

Minnesota School of Medicine, Minneapolis, is Chairman of the Committee.

JOSEPH R. WAGNER, widely known in the fields of biochemistry and nutrition, has joined the staff of the Quartermaster Food and Container Institute for the Armed Forces, Chicago, Ill., as Chief of the Fruit and Vegetables Branch, Food Development Division. He was formerly head of the Nutritional Research Section in the General Laboratory of Libby, McNeill & Libby, Blue Island, Ill.

E. EUGENE WEHR, M.D., is now Assistant Health Commissioner in the Cincinnati, Ohio, Department of Health. WATSON DERSHAM † recently took up his duties as Health Educator of the Department.

WALDO W. WILMORE † has been appointed Associate Executive Secretary of the Kansas Tuberculosis and Health Association, Topeka. He was formerly Personnel Officer under FLOYD C. BEELMAN, M.D.,* Kansas State Board of Health.

E. V. THIEHOFF, M.D.,* has been appointed Professor and Head of the Department of Public Health and Preventive Medicine of the University of Kansas, Lawrence. He resigner as Commissioner of the Peoria City, Ill., Health Department on April 1.

Eastern States

STANHOPE BAYNE-JONES, M.D.,* who is President of the Joint Administrative Board, New York Hospital-Cornell Medical Center, New York City, has been awarded the insignia of Honorary Commander of the Military Division of the Most Excellent Order of the British Empire. The presentation was recently made in Washington by Lord Inverchapel, Britain's Ambassador.

CONRAD BERENS, M.D., of New York City was elected President of the Pan American Association of Ophthalmology at the Third Pan American Congress of Ophthalmology held in Havana, Cuba, January 4–10.

ELSIE M. BOND has retired as Assistant Secretary of the State Charities Aid Association, New York, N. Y., after 25 years of service with the Association. Miss Bond served as the legislative representative of the S.C.A.A. in Albany during the administrations of Governors Alfred E. Smith, 1923–1929; Franklin D. Roosevelt, 1929–1932; Herbert H. Lehman, 1933–1942; and Thomas E. Dewey, 1943–1948.

THOMAS E. CONNOLLY was recently appointed Executive Secretary of the Onondaga Health Association, Syracuse, N. Y., to succeed ARTHUR W. TOWNE, retired recently as Executive Secretary of the Association after 24 years of notable service.

VLADO A. GETTING, M.D.,* was reappointed April 7 as Commissioner of Public Health of Massachusetts by GOVERNOR ROBERT F. BRADFORD. Dr. Getting, who is also President of the State and Territorial Health Officers Association, was first appointed to his present post in 1943 after having served as Worcester City Health Officer.

CUSHMAN D. HAAGENSEN, M.D., Associate Professor of Surgery at Columbia University's College of Physicians and Surgeons, New York, N. Y., has been named Coördinator of Cancer Teaching for the college's cancer research program. He is developing a project on cancer research designed to obtain close coöperation among major divisions of the university's medical sciences and clinical departments.

JOSEPH HIRSH,* who has been on leave of absence to WHO, has returned to the Research Council on Problems of Alcohol, New York, N. Y., and is now its Acting Director, following the

resignation of LYMAN C. DURYEA, M.D.,* to return to active service with the U. S. Army Medical Corps. Mr. Hirsh also serves as consultant to WHO.

THEODORE G. KLUMPP, M.D., President of Winthrop-Stearns, Inc., New York, N. Y., was elected President of the American Pharmaceutical Manufacturers Association at its recent annual convention in Havana, Cuba.

ESMOND R. LONG, M.D.,* Director of Medical Research and Therapy, National Tuberculosis Association, and Director of the Henry Phipps Institute, Philadelphia, Pa., has been named Editor-in-chief of the *American Review of Tuberculosis*, official journal of the National Tuberculosis Association's Medical Section, The American Trudeau Society, to succeed the late MAX PINNER, M.D.

WALSH MCDERMOTT, M.D., Associate Professor of Medicine, Cornell University Medical School, New York, N. Y., has been appointed to the newly created post of Managing Editor of the *American Review of Tuberculosis*, New York City.

GORDON W. MOLYNEUX,* formerly Supervising Milk Inspector for the Westchester County, New York, Department of Health has resigned from the county service to manage the Rock Gate Dairy Farm, Bedford Hills, N. Y.

HOWARD A. RUSK, M.D.,† New York, N. Y., received the first annual Survey Award for "an imaginative and constructive contribution to social work" on April 22, for his outstanding work in translating into civilian life what was learned about rehabilitation in the armed forces. The award was presented by EDUARD C. LINDEMAN, M.D., for *The Survey* Midmonthly during the 75th Anniversary Meeting of the National Conference of Social Work held in Atlantic City, N. J.

AUSTIN SMITH, M.D.,* Secretary of the Council on Pharmacy and Chemistry of the American Medical Association, Chicago, Ill., has been appointed Science Editor of *American Druggist Magazine*, New York, N. Y. Dr. Smith will continue his work with the A.M.A., and will maintain his office at the A.M.A.'s headquarters in Chicago.

Southern States

DANIEL BLAIN, M.D., formerly Chief of Neuropsychiatric Service for the Veterans Administration, Washington, D. C., has accepted the newly established position of Medical Director of the American Psychiatric Association.

FRANCIS G. BLAKE, M.D., Sterling Professor of Medicine at Yale University, New Haven, Conn., has been appointed to head the Medical Science Committee of the Federal Research and Development Board, Washington, D. C. Dr. Blake is a member of the Lasker Awards Committee, A.P.H.A.

JOHN M. DAVID† has accepted a position with the Layne-Atlantic Well Company, Albany, Ga. He was formerly Regional Engineer with the Georgia State Department of Public Health in the Southwest Region of Georgia.

LAWRENCE MACHEMER FISHER,* Sanitary Engineer Director of the Public Health Service, was recently appointed by PRESIDENT TRUMAN to the Interstate Commission on the Potomac River Basin. Other commission members serving by presidental appointment are C. C. BURGER, Department of the Army, and ABEL WOLMAN,* Johns Hopkins University.

ROBERT A. HINGSON, M.D., has been

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* Fellow A.P.H.A.
† Member A.P.H.A.

appointed anesthesiologist of the Department of Obstetrics of Johns Hopkins, Baltimore, effective July 1. He will be on special assignment from the U. S. Public Health Service to conduct a 5 year program in the relief of pain in childbirth.

CLARENCE I. STERLING† has been named Director of the Health and Sanitation Division, Institute of Inter-American Affairs, Washington, D. C., to succeed RICHARD J. PLUNKETT,† who resigned to become Assistant Editor of the *Journal of the American Medical Association.*

E. J. SUNKES, DR.P.H.,* has been appointed Director of the Division of Laboratories of the State Department of Public Health, Atlanta, Ga., succeeding THOMAS F. SELLERS, M.D.,* who was recently appointed Director of the State Department of Health. Dr. Sunkes has served 26 years with the Georgia State Laboratories.

NORMAN H. TOPPING, M.D., with the U. S. Public Health Service, Washington, D. C., has been appointed to the new position of Associate Director of the National Institute of Health, Bethesda, Md.

JESSE MEUSE was recently appointed as Negro Health Educator for the Florida State Board of Health, Jacksonville. He has had many years of experience in the field of public health and teaching in public schools of Florida. As a member of the division of health information, he will work with various groups in the promotion of better health among the Negro population of the state.

JOHN MULRENNAN, Director of Entomology, Florida State Board of Health, Jacksonville, was named President of the Florida Anti-Mosquito Association, at a joint meeting of the Florida group and the American Mosquito Association, in Ft. Pierce, Fla., March 18–31.

Western States

HAROLD D. CHOPE, M.D.,* Assistant Health Officer of the San Joaquin public health district, and a former Assistant Director of the California State Department of Health, became San Mateo County, California, Health Director, as of May 1.

CHESTER A. FEE has joined the staff of the Oregon State Board of Health, Portland, as Health Information Consultant. A veteran of World War I, Mr. Fee worked as an educator in California for some years. He has been associated with newspapers and magazines as writer or editor. Formerly with the Department of English at the University of Oregon, he is best known as the author of *Chief Joseph* and other works.

Other Areas

JOSEPH N. LANOIX† has been appointed Director General of Hydraulic Services for the Government of Haiti and for the American Sanitary Mission in Haiti.

SAM H. ZIA, M.D.,† of Peiping, China, has been appointed Professor and Head of the Department of Bacteriology of the Peiping Union Medical College, effective April 1. Dr. Zia is known in the United States as a former associate of HANS ZINSSER, M.D.

Deaths

EDNA M. KECH,* Director, Division of Health Education, State Health Department in Pennsylvania with offices in Harrisburg, died recently in Florida.

CONRAD KINYOUN,* Director of the Department of Health Laboratories of Savannah, Ga., died March 31. Burial was in the National Cemetery, Arlington, Va., with full military honors.

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* Fellow A.P.H.A.
† Member A.P.H.A.